

**EPA Superfund
Record of Decision:**

**CAROLAWN, INC.
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OU 02
FORT LAWN, SC
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Text:

RECORD OF DECISION
FOR THE
CAROLAWN (OU2) SUPERFUND SITE
FORT LAWN, CHESTER COUNTY, SOUTH CAROLINA

SEPTEMBER 1995

PREPARED BY:

U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION IV
ATLANTA, GEORGIA

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Carolawn (OU2) Site
Fort Lawn, Chester County, South Carolina

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the Carolawn (OU2) Superfund Site (the Site) located in Fort Lawn, Chester County, South Carolina, which was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), 42 U.S.C. 9601 et seq., and, to the extent practicable, the National Oil and Hazardous Substances Contingency Plan (NCP), 40 C.F.R. Part 300 et seq. This decision is based on the administrative record file for this Site.

The State of South Carolina concurs with the selected remedy.

DESCRIPTION OF THE SELECTED REMEDY

This remedy is the final action for the Site. In the absence of any significant source of contamination in the soil, surface water and sediment at the Site, the No Action alternative was selected as the preferred alternative to address the soil, surface water and sediment. In addition, a groundwater remedy has been selected under

STATUTORY DETERMINATIONS

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DECISION SUMMAR

CAROLAWN (OU2) SUPERFUND SITE FORT LAWN, CHESTER COUNTY, SOUTH CAROLINA

1.0 SITE LOCATION AND DESCRIPTION

The Carolawn Site, located on approximately 60 acres of land, is an abandoned, waste storage and disposal facility located in Fort Lawn, Chester County, South Carolina. The site is situated less than three miles west of Fort Lawn, and approximately one-half mile south of South Carolina Highway 9 (see Figure 1). Rural and agricultural areas surround much of the site. The Lancaster & Chester Railroad and County Road 841 border the site to the south and Fishing Creek borders the site to the east. Wooded areas and cultivated fields lie to the west and north of the site.

Approximately 30 permanent, single family residences are located north of the site; most of which are situated along South Carolina Highway 9. There are four residences located within 300 yards of the fenced area with a fifth residence located approximately 1,000 yards west of the site.

2.0 SITE HISTORY AND ENFORCEMENT ACTIVITIES

The Carolawn Site was originally owned by the Southeastern Pollution Control Company (SEPCO) of Charlotte, North Carolina. Beginning in 1970, SEPCO used the site as a storage facility for a solvent recovery plant located in Clover, South Carolina. SEPCO

went bankrupt in 1974, and abandoned the Site leaving approximately 2,500 drums of solvents on site. SEPCO had been storing the drummed solvents in anticipation of incinerating the waste. However, neither an incineration permit nor a storage/disposal permit was issued to SEPCO by the South Carolina Department of Health and Environmental Control (SCDHEC).

In January 1975, Columbia Organic Chemical Company (COCC) was contracted to clean up the SEPCO Plant in Clover, South Carolina. As part of this clean up effort, COCC transported and stored the waste of approximately 2,000 drums at the Carolawn Site. As payment for services rendered during the cleanup of the plant in Clover, South Carolina, COCC received the Carolawn property.

After 1975, South Carolina Recycling and Disposal, Inc. (SCRDI), a subsidiary of COCC, controlled the site. During 1978, SCRDI obtained a permit from SCDHEC for a one-time disposal of 300-400 drums containing inert waste. In October 1978 SCRDI was given approval to dispose of empty drums on the 3-acre fenced portion of the property. After the disposal, SCRDI sold the 3-acre fenced area of the site to the Carolawn Company.

In 1978, the Carolawn Company began the construction of two incinerators on the site. With conditional approval of SCDHEC, a

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test burn was conducted with one incinerator; however, full scale incineration never developed. At the time of abandonment of the site by the Carolawn Company, the 3-acre fenced area contained a concrete loading dock, a diked area for storage of tanks and drums, two incinerators, two storage trailers, 14 storage tanks, and as many as 480 drums containing liquid and solid wastes. An additional 660 drums and 11 storage tanks were located outside the fenced area to the north. In 1979, SCRDI was notified by SCDHEC that they would have to clean up the Carolawn site.

During the early 1980's, SCDHEC and EPA conducted site investigations at the Carolawn site. These investigations included collecting environmental and private residential well samples for analysis. The results of these investigations showed the presence of trichloroethane (TCE) and other solvents in nearby residential wells. The results also indicated that the Site was contaminated with high levels of metals and organic compounds. Due to the elevated levels of contamination found and the potential threat for imminent damage to public health and/or the environment, EPA initiated cleanup activities at the Site on December 1, 1981. The cleanup activities continued through February 1982, and included

removal of contaminated soils, drums, and liquid waste from the Site. Subsequently, in December 1982, the Site was proposed for inclusion on the National Priorities List (NPL). The Carolawn Site was finalized on the NPL in September, 1983. Since continued sampling of local residential wells showed persistently high levels of TCE, the Chester Municipal Sewer District's water main from Highway 9 was extended to four of the five residences living near the site. These four residents were connected to this alternative water supply in 1985.

Due to the complexity of the Carolawn Site, and in order to simplify the investigation and response activities, EPA divided the Site into two discrete study areas known as Operable Units (Figure 2). Operable Unit One (OU1) consists of source areas located on a 3-acre parcel within the fenced area of the Site and the groundwater located beneath the entire Site (to include the groundwater beneath Operable Unit Two-OU2). OU2 consists of the land located immediately around the fenced area and the land located north and west of the fenced area (north and west drum areas).

On August 29, 1985, a group of Potentially Responsible Parties (PRPs) (the Carolawn Generators Steering Committee) entered into a Partial Consent Decree with the United States Government to conduct a Remedial Investigation and Feasibility Study (RI/FS) for OU1. The purpose of this RI/FS was to fully characterized the nature and extent of the contamination present at the Site and to identify the relevant alternatives for remedial action. Phase I and Phase II of

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the RI/FS, conducted at the Site between 1985 and 1989, confirmed the presence of volatile organic compounds (VOCS) in the groundwater exceeding Maximum Contaminant Levels ("MCLs") set by the National Primary Drinking Water Regulations in the Safe Drinking Water Act. On September 27, 1989, EPA issued a ROD for OU1 which selected a groundwater interception and extraction system as the remedy for groundwater contamination at the Site. It was also determined that due to the effectiveness of the removal actions, no source of contamination remained within the fenced area of the site. However, the findings documented in the ROD for OU1 indicated that limited soil data was collected from the west and north drum areas located outside the fence; therefore, collection of additional samples was necessary to confirm the presence or absence of residual soil contamination in these areas.

In response to these concerns, EPA conducted a field investigation

at the Site in 1990. The purpose of the field investigation was to provide additional information on the presence or absence of contaminants in the subsurface soil at the former storage areas situated outside the fenced area. The sampling results indicated the presence of VOCs in the soil. Although this area was addressed during an EPA removal action and again during the 1990 field investigation by the EPA, Environmental Services Division, some uncertainties still existed as to the presence or absence of soil contamination. Based on EPA's review of all the available data, it was determined that a Remedial Investigation and Feasibility Study (RI/FS) needed to be conducted on OU2 in order to develop a baseline risk assessment which would be used to evaluate a final remediation disposition for the OU2 area of concern. Therefore, EPA conducted RI Field activities at the Site in May 1994 and in October 1994.

3.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION

The information repositories, which includes the Administrative Record, were established at the Lancaster County Library in 1989 and the Chester County Library in 1995 and are available to the public at both the information repositories maintained at the Lancaster County Library, 313 South White Street, Lancaster, South Carolina, the Chester County Library, 100 Center Street, Chester, South Carolina and at the EPA, Region IV Library, 345 Courtland Street, Atlanta, Georgia, 30365. The notice of availability of these documents was published in "THE ROCKHILL HERALD", "THE CHESTER NEWS" AND "THE LANCASTER NEWS" on July 24, 1995.

A public comment period for the proposed plan was held from July 24, 1995 to August 24, 1995. A public meeting was held on August 10, 1995, where representatives from EPA answered questions about

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the findings of the RI and the Baseline Risk Assessment and presented EPA's Proposed Plan for the Site.

EPA received oral comments during the August 10, 1995 public meeting, and written comments during the 30 day public comment period. Responses to the comments received by EPA are included in the Responsiveness Summary (Appendix B).

This ROD presents EPA's selected remedial action for the Site, chosen in accordance with CERCLA, as amended by SARA, and to the extent practicable, the NCP. The remedial action selection for this Site is based on information contained in the Administrative Record. The public and State participation requirements under Section 117 of CERCLA, 42 U.S.C. 9617, have been met for this Site.

4.0 SCOPE AND ROLE OF THIS ACTION WITHIN SITE STRATEGY

This ROD addresses the final response action for the Carolawn Site, addressing soil, surface water and sediment. Groundwater has been address under a separate ROD. The Baseline Risk Assessment indicates that no principal threat exists. at the Site, excluding groundwater. The selected alternative in conjunction with the previously selected groundwater remedy, will be protective of human health and the environment and is consistent with the NCP (40 CFR 300. 430(e)).

5.0 SUMMARY OF SITE CHARACTERISTICS

5.1 Climatology

The climate of the area is classified as humid-continental, with long hot summers and short mild winters. The nearest meteorological station is located in Chester, South Carolina, approximately 15 miles from the Site. Examination of Examination of meteorological data over a 30-year period indicate that the mean monthly temperatures range from 42.20F in January to 79.00F in July. The mean annual temperature is 61.10F. The mean annual precipitation is 47.11 inches, which is evenly distributed throughout the year.

5.2 Surface Hydrology

The topography of the Site is somewhat sloped so rainfall runoff, along with any leached contaminants, would tend to both stand and percolate into the ground and run off into adjacent surface water bodies. There are drainage ditches or drainagepipes which would tend to concentrate and divert runoff directly into adjacent surface water bodies such as Fishing Creek and the Catawba River.

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Fishing Creek is a moderately-sized stream with flow rates of less than 1000 cubic feet per second (cfs). The Catawba River is a moderate to large river with an annual flow rate of 4351 cfs.

5.3 Geologic and Hydrogeologic Setting

The Carolawn Site is located in the eastern Charlotte Belt of the Piedmont Physiographic Province of South Carolina. This belt is characterized by granitoid gneisses with strong compositional layering probably derived from sediments. The bedrock in the vicinity of the Site consists of Lower Metadiorite and Metagabbros. This complex is cut by pegmatite, granite and mafic dikes.

The stratigraphic units encountered at the site during the RI/FS

for OU1 were as follows:

- i) Alluvial deposits;
- ii) Residual and Colluvial clays;
- iii) Residuum and Saprolite; and
- iv) Bedrock.

The upper regions of the bedrock have been altered by in-situ weathering. This weathering has produced a partially to highly decomposed mixture of rock and soil which is referred to as saprolite. Saprolite retains the vestigial mineralogy and structure of the original rock.

The bedrock beneath the Site has undergone several episodes of deformation. These events have created joint and fractures. These structural features influence groundwater flow within the crystalline bedrock. The major structural features noted at the Carolawn site were joints and dikes. Joint measurements revealed the presence of three joint sets with primary sets striking N45°W and N5°W and a minor set striking at N35°W.

All joint sets had vertical to subvertical dips. The mafic dike identified strikes at approximately N45°W and is moderately well fractured.

The major hydrostratigraphic unit beneath the Site is the granodiorite bedrock. Saturated conditions were not encountered in the Residuum/Saprolite unit. It may be possible that the Residuum/Saprolite unit may usually be saturated but the RI was conducted during an extended drought and only unsaturated conditions were encountered in this unit. The groundwater in the bedrock is associated with the joints and fractures.

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The actual direction of groundwater flow through the bedrock is dependent upon the orientation of the joints and fractures. The preferred direction of groundwater flow is to the northeast and southeast. Hydraulic data collected during the RI indicates that Fishing Creek is the primary receptor of the groundwater flowing underneath the site. This data also indicates that the mafic dike does not influence, to any great degree, the hydrology of the site.

The estimated groundwater flow velocity is 1.96×10^{-4} centimeters/second (cm/sec). This is equivalent to 0.56 feet/day. Based on this velocity, it would take approximately six years for groundwater originating in the fenced area to reach Fishing Creek.

5.4 Nature and Extent of Contamination

The purpose of the Remedial Investigation (RI) was to gather and analyze sufficient data to characterize the Site in order to perform the Baseline Risk Assessment, which determines the Site's impact on human health and the environment. Both the RI and the Baseline Risk Assessment are used to determine whether remedial action is necessary at the Site.

The RI was designed to focus on the remaining areas of potential contamination not addressed during the RI/FS for Carolawn (OU1). The main portion of the RI was conducted in May 1994. Additional field work was conducted in October 1994.

During this period, samples of soil, surface water and sediment were collected to determine the nature and extent of contamination at the Site. Groundwater was not evaluated in the RI or the Baseline Risk Assessment, since a groundwater remedy addressing all contaminated groundwater at the Site has been selected for the Carolawn (OU1). Contamination at OU2 was characterized by multi-media sampling. Soil (41 surface and 9 subsurface) samples were collected from the area surrounding the three-acre fenced area (see Figure 3). In addition, one surface soil and one subsurface soil sample was collected from an offsite location to establish background conditions for the Site. Four surface water and sediment samples were collected from Fishing Creek, which borders the site to the east (see Figure 4). One of the surface water and sediment samples was collected upgradient of the Carolawn site to establish background conditions for the Site. All samples collected during the RI were analyzed for volatile and extractable organic compounds, pesticides, Polychlorinated biphenyls (PCB's) and metals. Additional RI activities included the following: an ecological site reconnaissance of the Carolawn site and the surrounding area was conducted in order to identify the various habitats which are potentially affected by contaminant migration from the Site; an ecological screening to identify endangered and

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threatened species within the site area; and all electromagnetic investigation to locate any buried wastes or metal objects at the site.

Surface Soil Sampling - The sampling results for surface soils are presented in Appendix A. Composite surface soil samples were collected from 41 grids on and around the site (see Figure 3). Purgeable organic compounds were detected in samples from nine of

the grids. Trichloroethylene was detected in sample 7-SLA at a concentration of 27J ug/kg. Tetrachloroethylene was detected in four samples. The concentrations ranged from 3J ug/kg in sample 34-SLA to 10J ug/kg in sample 8-SLA. Toluene was detected in eight samples and ranged in concentration from 2J ug/kg in sample 30-SLA to 25J ug/kg in sample 7-SLA. Purgeable organic compounds were not detected in the background sample, 45-SLA.

The pesticides 4,4'-DDT and 4,4'-DDE were detected in sample 3-SLA at concentrations of 13 ug/kg and 28 ug/kg, respectively. 4,4'-DDE was detected in the background sample, 45-SLA, at a concentration of 15J ug/kg.

PCB's were detected in nine samples. PCB-1254 was detected in all nine samples and ranged in concentration from 287 ug/kg in sample 15-SLA to 5,400C ug/kg in sample 1-SLA. Sample 1-SLA also contained 440 ug/kg of PCB-1248 and 700C ug/kg of PCB-1260. PCB's were not detected in the background sample.

Extractable organic compounds were detected in five surface soil samples. Sample 1-SLA contained 4-nitroaniline, fluoranthene, pyrene and chrysene at concentrations of 190J ug/kg, 92J ug/kg, 110J ug/kg and 180J ug/kg, respectively. Sample 15-SLA contained 790J ug/kg of bis (2-ethylhexyl)phthalate and sample 41-SLA contained 3,800J ug/kg of 4-nitroaniline. Extractable organic compounds were not detected in the background sample, 45-SLA.

Presumptive evidence of extractable organic compounds was detected in all the surface soil samples except samples 2-SLA, 26-SLA and 32-SLA. Unidentified extractable organic compounds were detected in all the samples except sample 10-SLA, 32-SLA; 8-SLA and 39-SLA. Sample 4-SLA, 6-SLA and 8-SLA contained the presumptive evidence of petroleum product.

A variety of metals were detected in the surface soil samples including: arsenic, barium, chromium, lead, mercury and magnesium. Elevated concentrations of these metals were detected in one or more samples. Arsenic was detected in most of the samples at concentrations less than 5 mg/kg. The exception was sample 41-SLA which contained 23 mg/kg. Sample 37-SLA also contained arsenic at

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a concentration of 5.7 mg/kg. Arsenic was not detected in the background sample, 45-SLA.

Barium was detected in every sample. With the exception of sample 28-SLA which contained 1,200 mg/kg, the concentrations ranged between 24J mg/kg in sample and 400 mg/kg in sample 5-SLA. Barium was detected at a concentration of 100 mg/kg in the background sample.

Chromium was detected in every sample. Elevated concentrations above background were detected in samples 4-SLA, 5-SLA, 6-SLA, 7-SLA and 41-SLA. The concentrations in these samples ranged from 170 mg/kg in sample 5-SLA to 380 mg/kg in sample 4-SLA. Chromium was detected at a concentration of 14 mg/kg in the background sample.

Lead was detected in all the surface soil samples. Seventeen samples contained concentrations greater than 20 mg/kg. Five samples including: 4-SLA, 5-SLA, 6-SLA, 7-SLA, 14-SLA and 41-SLA contained concentrations greater than 100 mg/kg. Lead was detected at a concentration of 22 mg/kg in the background sample.

Mercury was detected in nine samples including 2-SLA, 4-SLA, 5-SLA, 6-SLA, 7-SLA, 8-SLA, 12-SLA, 14-SLA and 15-SLA. The concentrations ranged from 0.32 mg/kg in the background sample and sample 15-SLA to 1.7 mg/kg in sample 6-SLA.

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Magnesium was detected in all the samples. Sample 41-SLA contained an elevated concentration at 26,000 mg/kg. The background sample contained 4,800 mg/kg of magnesium.

Subsurface Soil Sampling-- Nine subsurface soil samples were collected from grids 1, 3, 5, 11, 13, 15, 26, 33 and 35 (see Figure 3). The analytical results are included in Appendix A. No purgeable organic compounds or pesticides were detected in any of the samples. Sample 5-SLB contained, 48 ug/kg of PCB-1254.

Presumptive evidence of extractable organic compounds was detected in samples 1-SLB, 5-SLB, 15-SLB, 26-SLB, 33-SLB and 35-SLB. The concentrations ranged from 80JN ug/kg of aminoanthracenedione in sample 1-SLA to 4,000JN ug/kg of phenanthrenol in sample 26-SLB. Phenanthrenol was also detected at 4,000JN ug/kg in sample 33-SLB. Unidentified compounds were detected in samples 5-SLB, 15-SLB, 26-SLB, 33-SLB and 35-SLB. Sample 5-SLB contained the presumptive evidence of petroleum product. The background sample, 45-SLB, did not contain any extractable organic compounds.

A variety of metals was detected in the subsurface soil samples. Elevated concentrations of magnesium were detected in six of the

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nine samples and ranged in concentration from 6,700 mg/kg in sample 11-SLB to 15,000 mg/kg in sample 3-SLB. The background sample, 45-SLB, contained 3,000 mg/kg of magnesium. An elevated concentration of nickel, 56 mg/kg, was detected in sample 33-SLE. The background sample contained 20 mg/kg of nickel.

Sediment Sampling- Four sediment samples were collected from

Fishing Creek at the locations indicated on Figure 4. Analytical results are summarized in Appendix A. No purgeable organic compounds, PCB's or pesticides were detected in any of the samples. Two samples contained extractable organic compounds. Sample 2-SD contained one unidentified compound at a concentration of 900J ug/kg. Sample 4-SD contained 15 unidentified compounds and the presumptive evidence of four additional compounds.

A variety of metals was detected in all of the samples. Concentrations of the individual metals were consistent up and down gradient of the site with the exception of sample 3-SD. Arsenic and barium were detected in sample 3-SD at concentrations of 0.91J mg/kg and 24 mg/kg, respectively. Neither of these metals was detected in any other sample.

Surface Water Sampling- Four surface water samples were collected from four locations in Fishing Creek as indicated on Figure 4. Analytical results are summarized in Appendix A. Sample 201-SW is a duplicate of sample 1-SW. No purgeable or extractable organic compounds, pesticides or PCB's were detected in any of the samples. Metals were detected in all of the samples. Primury MCL's were not exceeded for any of the samples. The secondary MCL's for aluminum (0.05-0.2 mg/l), manganese (0.05 mg/l) and iron (0.3 mg/l) were exceeded in all of the samples. The field parameters of pH, specific conductance and temperature were measured at each location. Results are presented in Appendix A.

Ecological Screening - An endangered and threatened species and critical habitat screening was conducted to identify listed species that are found in the Carolawn Site vicinity. Data regarding the actual, past, or potential presence of rare, threatened, and endangered species have been obtained from the United States Fish and Wildlife Service, as well as the South Carolina Department of Natural Resources. Several federally-designated endangered or threatened species are thought to occur in the central and eastern portions of South Carolina. However, there are no critical habitats for federally/state-designated endangered or threatened species on or near the Carolawn site.

Electromagnetic Investigation - The primary purpose of this Electromagnetic investigation (EM) was to locate any buried waste or metal objects at the site. The EM investigatio: was conducted at

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the site using a Geonics EM-31 which is a noncontacting ground conductivity meter. A cartesian coordinate 25 feet by 25 feet grid system was established. Measurements were obtained from the center of each grid. The results of the EM conductivity survey performed at 130 stations are presented as a computer generated contour map on Figure 5.

The data generated consisted mostly of low values ranging from -2 to 98 mmhos/m. The highest value (98 mmhos/m) was due to interference from the fence. Consequently, this value was not used in preparing Figure 5. No magnetic anomalies were detected which would indicate the presence of buried metal objects.

6.0 SUMMARY OF SITE RISKS

A Baseline Risk Assessment was conducted as part of the RI to estimate the health or environmental threats that could result if no further action were taken at the Carolawn (OU2) site. Results are contained in the Final Baseline Risk Assessment Report. A Baseline Risk Assessment represents an evaluation of the risk posed if no remedial action is taken. The assessment considers environmental media and exposure pathways that could result in unacceptable levels of exposure now or in the foreseeable future.

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Data collected and analyzed during the RI provided the basis for the risk evaluation. The risk assessment process can be divided into four components: contaminant identification, exposure assessment, toxicity assessment, and risk characterization.

A. HUMAN HEALTH RISK ASSESSMENT

A.1 Contaminant of Concern

Data collected during the RI Were evaluated in the Baseline Risk Assessment. Contaminants were not included in the Baseline Risk Assessment evaluation if any of the following criteria applied:

Inorganic chemicals were eliminated if the maximum detected concentration was less than two times the average background concentration. Organic chemicals were retained regardless of the background concentration because they are not considered to occur naturally.

In absence of Region IV soil screening values, inorganic and organic chemicals were eliminated from further consideration if their maximumdetected concentration did not exceed the EPA Region III screening criteria for residential soil.

EPA Region IV has not developed screening values for sediment ingestion and dermal contact by humans. Therefore, inorganic

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and organic chemicals were eliminated from further consideration if their maximum, detected concentration did not

exceed EPA Region III screening criteria for residential soil.

Chemicals that were retained and evaluated in the Baseline Risk Assessment are known as chemicals of potential concern (COPCs). The following is a summary of the COPCs identified in each media sampled. In addition, a summary table is presented as Table 1 showing all of the COPCs by medium.

Soil. The results of the surficial soil analyses indicated that there are several COPCs present in the soil cover. These compounds include: arsenic, barium, beryllium, calcium, chromium, copper, iron, lead, magnesium, manganese, sodium and polychlorinated biphenyls (PCBs). The results of subsurface soil analyses indicate that there are several COPCs. These compounds include: arsenic, barium, copper, lead, manganese, mercury, zinc, PCBs, tetrachloroethene and toluene. Other concentrations of inorganics and organics were detected in the soil. However, the concentrations of these contaminants were below the typical background concentration ranges for native soils or were below the threshold standards established by EPA.

Surface Water and Sediment. There were no COPCs identified for surface water. In addition, no volatile and extractable organic compounds, pesticides or PCBs were detected in any of the samples. Metals were detected in all of the surface water samples. However, the concentrations of these contaminants were below the typical background concentration ranges.

The sediment analyses revealed that arsenic is the only chemical of potential concern in sediment. In addition, no volatile organic compounds, pesticides or PCBs were detected in any of the samples.

In summary, the results of the Baseline Risk Assessment concluded that there were no chemicals that significantly contributed to the exposure pathways having a Hazard Quotient above 1 or a cancer risk outside of the EPA acceptable range ($1E-6$ to $1E-4$).

A.2 Exposure Assessment

An exposure assessment was conducted to estimate the magnitude of exposure to the contaminants of potential concern at the Site and the pathways through which these exposures could occur. The results of this exposure assessment are combined with chemical-specific toxicity information to characterize potential risks. Human receptors on or near the site were characterized under current and potential future land use (residential) scenarios. The exposure pathways evaluated quantitatively for the current use scenario (for

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TABLE 1
HUMAN HEALTH

SUMMARY OF CHEMICALS OF POTENTIAL CONCERN

Chemical	Surface Soil	Subsurface Soil	Sediment
Inorganics			
Aluminum		X	
Arsenic	X	X	X
Barium	X		
Beryllium	X	X	
Calcium	X	X	
Chromium	X	X	
Copper	X		
Iron		X	
Lead	X	X	
Magnesium	X	X	
Manganese	X	X	
Potassium		X	
Sodium	X		
Vanadium		X	
Pesticides/PCBs			
PCBs	X		

There were no contaminants of potential concern identified for surface water.

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adults and children) are incidental ingestion of surficial soil, dermal contact with surficial soil, incidental ingestion of sediment from Fishing Creek and dermal contact with sediment in Fishing Creek. The exposure pathways evaluated under the future use scenario, include the four mentioned above as well as incidental ingestion of subsurface soil, and dermal contact with subsurface soil.

After exposure pathways were developed, the concentrations at the exposure points were calculated. These exposure point concentrations were based on the reasonably maximum exposure (RME) scenario - that is, the highest exposure that is reasonably expected to occur at a Site. The RME is calculated by taking the 95% upper confidence limit on the mean of the natural logarithm (ln) transformed data. The data are transformed because the data are assumed to be lognormal.

Once exposure point concentrations were developed, the chemical intake at each exposure point was calculated. These assumptions, along with the exposure point concentrations are used in equations to develop the Chronic Daily Intake (CDI) for each exposure

for each exposure
pathway.

A.3 Toxicity Assessment

The purpose of the toxicity assessment is to assign toxicity values (criteria) to each chemical evaluated in the Baseline Risk Assessment. The toxicity values are used in combination with the estimated doses to which a human could be exposed to evaluate the potential human health risks associated with each contaminant. Human health criteria developed by EPA (cancer slope factors and non-cancer reference doses) were preferentially obtained from the Integrated Risk Information System (IRIS, 1993) or the 1992 Health Effects Assessment Summary Tables (HEAST; EPA, 1992). In some cases the Environmental Criteria Assessment Office (ECAO, 1992) was contacted to obtain criteria for chemicals which were not listed in IRIS or HEAST.

Slope factors (SF) have been developed by EPA for estimating excess lifetime cancer risks associated with exposure to potentially carcinogenic contaminants of concern. SFs, which are expressed as risk per milligram per kilogram day, are multiplied by the estimated intake of a potential carcinogen, in mg/kg-day, to provide an upper-bound estimate of the excess lifetime cancer risk associated with exposure at that intake level. The term "upper bound" reflects the conservative estimate of the risks calculated from the SF. Use of this approach makes underestimation of the actual cancer risk highly unlikely. Slope factors are derived from the results of human epidemiological studies or chronic animal

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bioassay data to which mathematical extrapolation from high to low dose, and from animal to human dose, has been applied, and statistics to account for uncertainty have been applied (e.g. to account for the use of animal data to predict effects on humans).

Reference doses (RfDs) have been developed by EPA for indicating the potential for adverse health effects from exposure to the chemicals of concern exhibiting noncarcinogenic effects. RfDs, which are expressed in units of mg/kg-day, are estimates of daily exposure levels for humans, including sensitive subpopulations, that are likely to be without risk of adverse effect. Estimated intakes of contaminants of concern from environmental media (e.g. the amount of a chemical of concern ingested from contaminated drinking water) can be compared to the RfD. RfDs are derived from human epidemiological studies or from animal bioassay data to which uncertainty factors have been applied (e.g., to account for the use of animal data to predict effects on humans).

A.4 Risk Characterization

In this final step of the risk assessment, the results of the exposure and toxicity assessments are combined to provide numerical estimates of the carcinogenic and non-carcinogenic risks for the Site.

Cancer Risk is expressed as an incremental probability of an individual developing Cancer over a lifetime as a result of exposure to the potential carcinogen. Excess lifetime cancer risks are determined by multiplying the intake level with the slope factor. These risks are probabilities that are generally expressed in scientific notation ($1\text{E}-06$ or 1×10^{-6}). An excess lifetime cancer risk of $1\text{E}-06$ indicates that, as a plausible upper bound, an individual has a one in one million additional chance of developing cancer, over a 70 year lifetime, as a result of site-related exposure to a carcinogen. The NCP states that sites should be remediated to chemical concentrations that correspond to an upper-bound lifetime cancer risk to an individual not exceeding $1\text{E}-06$ to $1\text{E}-04$ excess lifetime risk. Carcinogenic risk levels that exceed this range indicate the need for performing remedial action at the site.

The total incremental lifetime cancer risk for offsite residents under current land use conditions was $1\text{E}-06$. This represents the sum of a child (age 1 to 6), adolescent (age 7-16), and adult (age 7-30), who is exposed to surface soil and sediment. The risk is primarily due to exposure of arsenic in surface soil and sediment. This risk is at the risk level determined to be protective by EPA.

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The incremental cancer risk for future offsite workers was $6\text{E}-06$. This was the sum of both exposure pathway risks - incidental ingestion of, and dermal contact with, surface soil. The risk was due to incidental ingestion of, and dermal contact with, arsenic, beryllium, and PCBs. This risk is within the risk range deemed protective of human health by the EPA.

The lifetime excess cancer risk for future onsite construction workers was $2\text{E}-06$. This was the sum of all four exposure pathway risks- incidental ingestion of surface and subsurface soil, and dermal contact with surface and subsurface soil. The risk was due to incidental ingestion of, and dermal contact with, arsenic, beryllium, and PCBs (surface soil only) in both surface and subsurface soil. This risk is within the risk range deemed protective of human health by the EPA.

The total incremental lifetime cancer risk for future onsite residents was $2E-05$. This was the sum of all four pathway risks - incidental ingestion of soil, dermal contact with soil, incidental ingestion of sediment, and dermal contact with sediment for both child and adult residents. The risk was due to incidental ingestion of, and dermal contact with, arsenic in sediment, and arsenic, beryllium, and PCBs in surface soil.

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To characterize potential noncarcinogenic effects, estimated intake levels are compared with toxicity values. Potential concern for noncarcinogenic effects of a single contaminant in a single medium is expressed as a Hazard Quotient (HQ). A Hazard Quotient is calculated for non-carcinogens to assess whether health problems, other than cancer, might be associated with a Superfund site. It is derived by dividing the chemical exposure level at the site by the chemical level determined to be safe. If the Hazard Quotient is greater than 1 there may be concern for potential health effects. Hazard quotients are calculated for each chemical of potential concern found at the site. To assess the overall potential for non-carcinogenic effects Dosed by more than one chemical, all of the hazard quotients calculated for each chemical are added together. The sum of the hazard quotient is called a hazard index (HI). Like the hazard quotient, if the hazard index is greater than 1.0 then the contaminants pose a possible health risk.

An evaluation of the noncarcinogenic risk calculations presented in the risk assessment indicates that all of the hazard indices under the current and future use scenarios are less than 1.0.

The total HI for current adolescent trespassers was 0.03, primarily due to incidental ingestion of, and dermal contact with arsenic, chromium (VI), and PCBs in surface soil.

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The total HI for current offsite child residents (age 1 to 6) was 0.005, due to incidental ingestion of, and dermal contact with, arsenic in surface soil. The total HI for the current off site adult resident was 0.0007, also due to incidental ingestion and dermal contact with arsenic in sediment.

The total HI for future onsite workers was 0.08, primarily due to incidental ingestion of, and dermal contact with PCBs, arsenic, chromium, and manganese in surface soil. Future onsite construction workers exposed to both surface and subsurface soil had a total HI of 0.7, primarily due to incidental ingestion of, and dermal contact with PCBs, chromium, and arsenic in surface soil; and aluminum, arsenic, chromium, and vanadium in subsurface soil.

The total HI for future onsite child residents (age 1 to 6) was 0.7, primarily due to incidental ingestion of, and dermal contact with, arsenic, chromium, and PCBs in surface soil. The total HI for future onsite adult residents (age 7 to 30) was 0.1, once again primarily due to incidental ingestion of, and dermal contact with, arsenic, chromium, and PCBs in surface soil.

To conclude, carcinogenic risk estimates for current and future conditions are either below the lower limit $1\text{E}-6$ or within EPA's acceptable range ($1\text{E}-6$ to $1\text{E}-4$). No non-carcinogenic hazard indices exceeded EPA's acceptable level of 1.0. In summary, EPA has determined that risks to human health from contaminants in the soil and sediment are within EPA's acceptable risk range and that remediation of the soil and sediment would not be required for the protection of human health.

B. ECOLOGICAL RISK ASSESSMENT

B.1 Contaminant Identification

A qualitative risk assessment was conducted to determine if ecological chemicals of potential concern (ECOPCs) posed an unacceptable risk to the ecological receptors on and near the Site. ECOPCs are a subset of all chemicals positively identified at the Site. The screening criteria that are used to select ecological chemicals of potential concern are specific to ecological receptors; therefore, ECOPCs may often include different individual chemicals than the human health assessment. The chemicals at the Site were evaluated as follows:

- 1) Chemicals were not listed if they were not detected in the RI environmental samples provided that the sample quantitation limit (SQL) was not in excess of the appropriate screening values;

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- 2) Inorganic chemicals were eliminated if the detected concentrations did not exceed two times the background concentration (provided that the background concentration did not exceed screening levels);
- 3) All chemicals were eliminated if they were only tentatively identified;
- 4) All chemicals with a low frequency of detection (less than 5 percent for any media being evaluated) were eliminated from consideration;
- 5) Chemicals were eliminated from consideration if the maximum

detected concentration did not exceed the appropriate screening value;

- 6) All inorganic chemicals in surface soils for which the range of detection did not exceed the chemicals natural background concentrations were eliminated from consideration.

The following is a summary of the ECOPCs identified in each media sampled. In addition, a summary table is presented as Table 2 showing all of the ECOPC by medium.

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Soil. The results of the surficial soil analyses indicated that there are several ECOPCs present in the soil cover. These compounds include: arsenic, barium, copper, lead, manganese, mercury, zinc, PCBs, tetrachloroethene, and toluene. Other concentrations of inorganics and organics were detected in the soil. However, the concentrations of these contaminants were below the typical background concentration ranges for native soils or were below the threshold standards established by EPA.

Sediment. With the exception of barium, all chemicals detected in sediment were eliminated as an ECOPC. Barium was unable to be eliminated from sediment during the screening process, because no screening value or background concentration was available for this compound. However, barium is not likely to cause a threat to the aquatic environment because it normally precipitates out of solution as an insoluble salt and therefore is less bioavailable to aquatic organisms. It should be noted that it is unlikely that barium in sediment will pose a significant risk to terrestrial organisms at the site. The rationale behind this statement is that it is unlikely that terrestrial organisms will come in direct contact with the sediment at the site. In addition, barium is not known to bioaccumulate; therefore, this limits the possibility that terrestrial as well as aquatic organisms will come into direct contact with these contaminants through the food chain. For these reasons, exposure of terrestrial and aquatic organisms to barium in

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TABLE
ENVIRONMENTAL HEALTH
SUMMARY OF ECOLOGICAL CHEMICALS OF POTENTIAL CONCERN

Chemical Inorganics	Surface Soil	Sediment
Arsenic	X	
Barium	X	X
Copper	X	
Lead	X	
Manganese	X	
Mercury	X	
Zinc	X	

Pesticides/PCBs	
PCBs	X
Purgeable Organics	
Tetrachloroethene	X
Toluene	X

There were no contaminants of potential concern identified for surface water.

Barium was unable to be eliminated from sediment during the screening process, because no screening value or background concentration was available for this compound. In addition, barium is not known to bioaccumulate; therefore, this limits the possibility that terrestrial as well as aquatic organisms will come into direct contact with these contaminants through the food chain. For these reasons, exposure of terrestrial and aquatic organisms to barium in sediment was no further evaluated in this Baseline Risk Assessment.

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sediment was not further evaluated in this Baseline Risk Assessment.

B.2 Ecological Exposure Assessment

Once the contaminants have reached the habitat, one or more of three possible exposure routes may come into play for a specific receptor. These exposure routes are 1) ingestion, 2) respiration, and 3) direct contact. Ingestion of Contaminants occurs when an organism ingests contaminated food or incidentally ingests other contaminated media while feeding or through incidental ingestion of contaminated soil. Respiration of contaminants occurs when an organism absorbs contaminants across a respiratory membrane. Contaminants are also absorbed through direct contact with body parts other than the respiratory organs.

In this particular study, the exposure route via ingestion (of soils) was evaluated for the American robin (*Turdus migratorius*) and the eastern cottontail rabbit (*Sylvilagus floridanus*) in order to estimate the magnitude of actual or potential exposure to ECOPC in the surface soil. Intake modeling was necessary to estimate the actual dosage of contaminants that these species may be ingesting from the surface soil. Estimates of dosage were based on daily intake rates and the exposure concentration.

Neither the exposure route via respiration or direct contact (dermal) were estimated for terrestrial receptors. The air pathway was not a concern in this particular study and was eliminated. Also, both the inhalation and dermal exposure routes become very

complex to model (EPA, 1993).

The exposure point concentration (EPC) is the concentration of a contaminant in an environmental medium to which a specific receptor is exposed. It is generally calculated using statistical methodology from a set of data derived from environmental sampling. The specific methodology used to derive the exposure point concentrations in this Baseline Ecological Risk Assessment (BERA) is presented below.

For ECOPC and media in which the number of samples was less than 3, the maximum concentration detected was used to represent the exposure point concentration.

For chemicals and media in which the number of samples was equal to or greater than 3, the upper 95 percent confidence limit (UCL) of the log normal arithmetic mean was used to represent the exposure point concentration. In calculating the UCL, one-half the value of the detection limit was used in calculating the log normal mean for all non-detect samples.

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For chemicals and media in which the UCL exceeded the maximum detected concentration, the maximum concentration detected was used to represent the exposure point concentration.

In this particular study, the two surrogate terrestrial receptors (American robin and eastern cottontail rabbit) chosen for study are thought to be exposed to contaminated surface soils via either incidental ingestion of the soil or by ingestion of contaminated food. Total exposure of these organisms to the contaminated surface soil was estimated by approximating how much of the contaminated media and/or food the receptor is taking in on a daily basis. This value is otherwise known as the daily intake (DI) dose. The equation and process used to calculate the DI dose for each of these species is presented in the Baseline Risk Assessment.

B.3 Ecological Toxicity Assessment

The ecological toxicity assessment involves determining the types of adverse effects associated with contaminant exposures, the relationship between the magnitude of exposure and adverse effects, and the related uncertainties involved with the assessment. Environmental toxicity data often comes in the form of the concentration or dose necessary in order to induce some observed effect or response. Quite frequently the observed effect is some sort of mortality event such as the death of 5 percent of the population in an experimental environment (i.e. LC or LD50). In the case of this ecological risk assessment, environmental toxicity

data often comes in the form of environmental benchmarks, such as NOAELs or LOAELs, obtained from various research studies.

The Toxicity Values for the ECOPC contained in surface soil that were used to gage relative risk in this BERA were obtained either directly from the literature, from chemical specific documents issued by the Agency of Toxic Substances and Disease Registry, biological reports issued by the United States Fish and Wildlife Service, from chronic No-Observed-Adverse-Effect Level (NOAEL) or chronic Lowest-Observed-Adverse-Effect-Level (LOAEL) obtained from HEAST, March 1994, or Toxicological Benchmarks for Wildlife.

A safety factor of 10 was applied when converting from a chronic LOAEL to a chronic NOAEL. A listing of TRVs for the American robin and the eastern cottontail rabbit for each ECOPC in the surface soil is presented in Tables 3 and 4, respectively.

B.4 Ecological Risk Characterization

Risk Characterization is the final phase of the risk assessment. It is at this phase that the likelihood of adverse effects occurring as a result of contaminant exposure to a contaminant is evaluated In order to give "risk" 'a numerical] value, a Hazard Quotient (HQ) for each ECOPC is-developed.

TABLE TRVs FOR THE AMERICAN ROBIN CAROLAWN SITE (OU2) ECOLOGICAL RISK ASSESSMENT FORT LAWN, SOUTH CAROLINA			
CHEMICAL	TRV DERIVATION	ROBIN SPECIES/REFERENCE LOAEL TRV	ROBIN NOAEL TRV
LOAEL VALUE	NOAEL VALUE		
mg/kg/day	mg/kg/day		
INORGANICS			
ARSENIC		Brown-headed cowbird (2)	
1.10E+02	1.10E+01	1.10E+02	
1.10E+01			
COPPER		1-day old chicks (3)	
3.32E+02	3.32E+01	3.32E+02	
3.32E+01			
LEAD		American Kestrel (2)	
5.00E+02	5.00E+01	5.00E+02	
5.00E+01			
MANGANESE		New Hampshire chicks (4)	
7.21E+02	7.21E+01	7.20E+02	
7.20E+01			
MERCURY		Ring-necked pheasant (2)	
4.20E+01	4.20E+01	4.20E+01	
4.20E+00			

ZINC		Domestic hen (2)	
2.03E+04	2.03E+03	2.03 E+04	
2.03E+03			
ORGANICS			
TETRACHLOROETHENE		Mouse (1)	
1.40E+02	1.40E+01	1.40E+02	1.
TOLUENE		Mouse (3)	
2.60E+02	2.60E+01	2.60E+02	
2.60E+01			
PESTICIDES/PCBs			
PCBs		Ring-necked Pheasant (3)	
1.80E+00	1.80E-01	1.80E+00	1.80E-
01			

(1) HEAST, March, 1994

(2) Eisler, January, 1988; April, 1988; April 1987; April, 1993

(3) Opresko, D.M.; B.E. Sample; G.W. Suter II. Toxicological Benchmarks for Wildlife: 1994
Revision

(4) Gallup, Willis D. and L.C. Norris

A safety factor of 10 was applied to the LOAEL value to extrapolate to a NOAEL value.

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TABLE 4
TRVs FOR THE EASTERN COTTONTAIL RABBIT
CAROLAWN SITE (OU2) ECOLOGICAL RISK ASSESSMENT
FORT LAWN, SOUTH CAROLINA

CHEMICAL DERIVATION		TRV	
VALUE	RABBIT	LOAEL VALUE	NOAEL
mg/kg/day	SPECIES/REFERENCE	mg/kg/day	
INORGANICS	LOAEL TRV	NOAEL TRV	
ARSENIC	Mouse (3)	1.26E+00	
1.26E-01	1.26E+00	1.26E-01	
COPPER	Mink (3)	1.17E+02	
1.17E+01	1.17E+02	1.17E+01	
LEAD	Rat (3)	8.80E+01	
8.00E+00	8.00E+01	8.00E+00	
MANGANESE	Rat (3)	8.00E+02	
8.80E+01	8.80E+02	8.80E+01	
MERCURY	Mouse (3)	1.32E+02	
1.32E+01	1.32E+02	1.32E+01	,
ZINC	Rat (3)	1.60E+03	
1.60E+02	1.60E+03	1.60E+02	
ORGANICS			
TETRACHLOROETHENE	Mouse (2)	1.40E+02	ú
1.40E+01	1.40E+02	1.40E+01	

TOLUENE	Mouse (3)	2.60E+02
2.60E+01	2.60E+02	2.60E+01
PESTICIDES/PCBs		
PCBs	Rat (1)	1.00E+01
1.00E+00	1.00E+01	1.00E+00

TRV- Toxicity Reference Value

- (1) Agency of Toxic Substances and Disease Registry (ATSDR)
 - (2) HEAST, March, 1994
 - (3) Opresko, D.M.; B.E. Sample; G.W. Suter II. Toxicological Benchmarks for Wildlife: 1994
- Revision

A safety factor of 10 was applied to the LOAEL value to extrapolate to a NOAEL value.

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The Hazard Quotient (HQ) method was used to define potential risk to the two representative terrestrial receptors via the soil exposure pathway. This method involves: 1) Estimating the exposure of each receptor species to ECOPCs by ingestion of contaminated food and/or soil; 2) Determining from past scientific studies the highest exposure level which produces no observed adverse effects (NOAEL) and the lowest exposure level which produces observed adverse effects (LOAEL) in the representative species; and, 3) Dividing the estimated receptor species exposure level by the NOAEL and LOAEL. A LOAEL based HQ greater than 1 is indicative that there may be a potential for adverse effects on the receptor species.

Using the american robin as a potential receptor for the soil exposure pathway, the LOAEL HQ values ranged from 4.7E-06 to 6.1E-01 and the NOAEL HQ values ranged from 4.7E-05 to 6.1E+00 (See Table 5). In accordance with EPA's draft guidance (Ecological Risk Assessment Guidance for Superfund - Process for Designing and Conducting Ecological Risk Assessments) for Ecological Risk Assessments, remedial goals for the protection of ecological receptors should be bounded by the NOAEL value on the lower end and the LOAEL value on the upper end. Thus, the risk range is between 6.1E-01 to 4.7E-05 which does not exceed EPA's acceptable level of 1.0.

Using the eastern cottontail rabbit, a potential receptor for the soil exposure pathway, the LOAEL values ranged from 8.8E-08 to 6.2E-03 and the NOAEL values ranged from 8.8E-07 to 6.2E-02 (See Table 6). In accordance with EPA's guidance for Ecological Risk Assessments, remedial goals for the protection of ecological receptors should be bounded by the NOAEL value on the lower end and the LOAEL value on the upper end. Thus, the risk range is between 6.2E-03 to 8.8E-07 which does not exceed EPA's acceptable level of 1.0.

In summary, EPA has determined that risks to the ecological receptors from contaminants in the soil are below EPA's acceptable risk range and that remediation of the soil would not be required for the protection of the environment.

7.0 DESCRIPTION OF "NO ACTION" SELECTED ALTERNATIVES

EPA has determined, based on the results of the Remedial Investigation and the Baseline Risk Assessment, that no action is needed for the soil, surface water or sediment. In addition, a groundwater remedy has been selected under a Record of Decision issued for Carolawn (OU1). However, should future monitoring of the site (e.g. Five-Year Review) indicate that the site poses an unacceptable risk to the environment, then EPA, in consultation with the State of South Carolina, may initiate clean-up actions under the authority of CERCLA and in accordance with the National Oil and Hazardous substances Pollution Contingency Plan.

TABLE
SURFACE SOIL HAZARD QUOTIENTS FOR THE AMERICAN ROBIN
CAROLAWN SITE (OU2) ECOLOGICAL RISK ASSESSMENT
FORT LAWN, SOUTH CAROLINA

HQ	HQ	DOSE	DOSE	DOSE	LOAEL	NOAEL
	CHEMICAL	HQ	HQ	HQ	HQ	
MEAN+	MAX+	MEAN	MAXIMUM	UCL	TRV	TRV
		UCL+	MEAN	MAX*	UCL*	
INORGANICS						
ARSENIC		9.06E-01	7.63E+00	1.05E+00	1.10E+02	1.10E+01
8.2E-03	6.9E-02	9.5E-03	8.2E-02	6.9E-01	9.5E-02	
COPPER		7.22E+00	5.19E+01	1.01E+01	3.32E+02	3.32E+01
2.2E-02	1.6E-01	3.0E-02	2.2E-01	1.6E+00	3.0E-01	
LEAD		1.16E+01	7.41E+01	1.81E+01	5.00E+02	5.00E+01
2.3E-02	1.5E-01	3.6E-02	2.3E-01	1.5E+00	3.6E-01	
MANGANESE		4.44E+01	1.64E+02	6.83E+01	7.21E+02	7.21E+01
6.2E-02	2.3E-01	9.5E-02	6.2E-01	2.3E+00	9.5E-01	
MERCURY		7.37E-02	5.64E-01	9.13E-02	4.20E+01	4.20E+00
1.8E-03	1.3E-02	2.2E-03	1.8E-02	1.3E-01	2.2E-02	
ZINC		8.40E+01	3.99E+02	1.01E+02	2.03E+04	2.03E+03
4.1E-03	2.0E-02	5.0E-03	4.1E-02	2.0E-01	5.0E-02	
ORGANICS						
TETRACHLOROETHENE		9.13E-04	1.56E-03	9.54E-04	1.40E+02	1.40E+01
6.5E-06	1.1E-05	6.8E-06	6.5E-05	1.1E-04	6.8E-05	
TOLUENE		1.22E-03	4.76E-03	1.32E-03	2.60E+02	2.60E+01
4.7E-06	1.8E-05	5.1E-06	4.7E-05	1.8E-04	5.1E-05	
PESTICIDES/PCBs						
PCBS		9.87E-03	1.09E+00	6.12E-02	1.80E+00	1.80E-01
5.5E-03	6.1E-01	3.4E-02	5.5E-02	6.1E+00	3.4E-01	

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+Hazard quotients derived From I.C)AJ~L TRVs

*Hazard quotienta derived fi'orn NOAJ~L TRVs

EPC - Exposure Point Concentrations
 TRV * Toxicity Reference Values
 HQ - Hazard Quotient

TABLE
 SURFACE SOIL HAZARD QUOTIENTS FOR THE
 EASTERN COTTONTAIL RABBIT
 CAROLAWN SITE (OU2) ECOLOGICAL
 RISK ASSESSMENT
 FORT LAWN, SOUTH
 CAROLINA

NOAEL	HQ	DOSE		DOSE		DOSE		LOAEL
		HQ	MEAN	HQ	MAXIMUM	HQ	UCL	HQ
TRV	MEAN+	MAX+		UCL+	MEAN*	MAX*		UCL*
INORGANICS								
ARSENIC			9.34E-04		7.86E-03		1.08E-03	1.26E+00
1.26E-01	7.4E-04	6.2E-03		8.6E-04	7.4E-03		6.2E-02	8.6E-03
COPPER			6.50E-02		4.67E-01		9.12E-02	1.17E+02
1.17E+01	5.6E-04	4.0E-03		7.8E-04	5.6E-03		4.0E-02	7.8E-03
LEAD			2.39E-02		1.53E-01		3.73E-02	8.00E+01
8.00E+00	3.0E-04	1.9E-03		4.7E-04	3.0E-03		1.9E-02	4.7E-03
MANGANESE			1.45E-01		5.37E-01		2.23E-01	8.80E+02
8.80E+00	1.6E-04	6.1E-04		2.5E-04	1.6E-03		6.1E-03	2.5E-03
MERCURY			2.17E-04		1.66E-03		2.69E-04	1.32E+02
1.32E+01	1.6E-06	1.3E-05		2.0E-06	1.6E-05		1.3E-04	2.0E-05
ZINC			8.92E-02		4.23E-01		1.07E-01	1.60E+03
1.60E+02	5.6E-05	2.6E-04		6.7E-05	5.6E-04		2.6E-03	6.7E-04
ORGANIC								
TETRACHLOROETHENE			2.09E-05		3.58E-05		2.19E-05	1.40E+02
1.40E+01	1.5E-07	2.6E-07		1.6E-07	1.5E-06		2.6E-06	1.6E-06
TOLUENE			2.29E-05		8.96E-05		2.48E-05	2.60E+02
2.60E+01	8.8E-08	3.4E-07		9.5E-08	8.8E-07		3.4E-06	9.5E-07
PESTICIDES/PCBs								
PCBs			1.75E-04		1.93E-02		1.09E-03	1.00E+01
1.00E+00	1.8E-05	1.9E-03		1.1E-04	1.8E-04		1.9E-02	1.1E-03

+Hazard quotients derived from LOAEL TRVs

*Hazard quotients derived from NOAEL TRVs

EPC - Exposure Point Concentration

TRV - Toxicity Reference Values

HQ - Hazard Quotient

8.0 DOCUMENTATION OF SIGNIFICANT CHANGES

The selected remedy as presented in this decision document has no difference, significant or otherwise, from the preferred alternative presented in the proposed plan. In addition, the State of South Carolina concurs with this remedy. South Carolina's letter of concurrence is provided in Appendix C to this ROD.

APPENDIX A - ANALYTICAL DATA SUMMARIES

Soil Analytical Data Summar									
Carolawn									
Ft. Lawn, South Carolina									
SLA	5-SLA	5-SLB	6-SLA	1-SLA 7-SLA 4/25/94	1-SLB 4/25/94	2-SLA 4/25/94	3-SLA 4/25/94	3-SLB 4/25/94	4-
INORGANIC ELEMENTS									
MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	
ARSENIC				--	1.2J	3.7	4.1	1J	3
--	--	3	1.7J						
BARIUM				200	90	86	64	420	
1200	400	210	290	190					
BERYLLIUM				--	--	0.50J	0.44J	2.5JN	
0.75J	.045J	1.5	0.75J	0.74J					
CADMIUM				--	--	--	--	--	--
0.97J	--	--	--						
COBALT				15	23	21	22	25	17
19	38	17	13						
CHROMIUM				62	38	83	39	40	380
170	28	210	220						
COPPER				43	--	130	--	--	410
230	53	280	280						
NICKEL				8.3	9.3	8.5J	8.4	46	21
22	39	35	14						
LEAD				43	9.3	70	14	--	310
220	6.7	430	350						
VANADIUM				51	100	77	110	130	63
50	73	67	53						
ZINC				37J	--	--	--	58J	
130J	72J	43J	74J	120J					
MERCURY				--	--	0.53	--	--	
0.98	1.0	--	1.7	0.70					
ALUMINUM				7900	13000	9400	16000	29000	
12000	12000	16000	15000	14000					
MANGANESE				760	650	600	490	250	260
210	250	550	180						
CALCIUM				1800	--	1100	870	2600	

2600	2200	4700	2600	3300				
	MAGNESIUM		2000	1100	960	1200	15000	
3100	2700	7600	3000	3800				
	IRON		18000	33000	22000	30000	42000	
25000	19000	27000	23000	20000				
	SODIUM		120	--	--	--	--	--
--	--	--	--					
	POTASSIUM		520	230	400	570	6000	550
780	1600	880	980					

* * * FOOTNOTES* * *

J - ESTIMATED VALUE
 -- - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED

Appendix A-1

Soil Analytical Dat

Summary (cont)

Carolawn
 Ft. Lawn, South

Carolina

			1-SLA		1-SLB		2-SLA
3-SLA	3-SLB	4-SLA		5-SLA		5-SLB	
6-SLA	7-SLA						
			04/25/94		04/25/94		04/25/94
04/25/94	04/25/94	04/25/94		04/25/94		04/25/94	
04/26/94	04/26/94						
PURGEABLE ORGANIC COMPOUNDS			UG/KG		UG/KG		UG/KG
UG/KG	UG/KG	UG/KG		UG/KG		UG/KG	
UG/KG	UG/KG						
TRICHLOROETHENE (TRICHLOROETHYLENE)			--		--		--
--	--	--		--		--	--
-	27J						-
TETRACHLOROETHENE (TETRACHLOROETHYLENE)							
--	--	--					
--	--	--					
--	--	--					
8J							
8J							
TOLUENE							
--	--	--					
--	--	--					
--	--	--					
25J							
25J							
PESTICIDE/PCB COMPOUNDS			UG/KG		UG/KG		UG/KG
UG/KG	UG/KG	UG/KG		UG/KG		UG/KG	

UG/KG	UG/KG							
13	4,4'-DDT	(P,P'-DDT)	--	--	--	--	--	--
-			--	--	--	--	--	-
28	4,4'-DDE	(P,P'-DDE)	--	--	--	--	--	--
-			--	--	--	--	--	-
320	PCB-1254	(AROCOR 1254)	2900C	5400C	440	--	--	--
--			--	--	--	--	--	--
--	PCB-1248	(AROCOR 1248)	--	440C	--	--	--	--
-			--	--	--	--	--	-
--	PCB-1260	(AROCOR 1260)	--	700C	--	--	--	--
-			--	--	--	--	--	-

FOOTNOTES

J - ESTIMATED VALUE
 -- - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED
 C - CONFIRMED BY GC/MS

Appendix A

Soil Analytical Data Summary (cont)

Carolawn

Ft. Lawn, South Carolina

3-SLA	3-SLB	4-SLA	1-SLA	1-SLB	2-SLA
6-SLA	7-SLA		5-SLA	5-SLB	
04/25/94	04/25/94	04/25/94	04/25/94	04/25/94	
04/25/94	04/26/94	04/26/94	04/25/94	04/25/94	
EXTRACTABLE ORGANIC COMPOUNDS			UG/KG	UG/KG	
UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	
UG/KG	UG/KG	UG/KG			
	4-NITROANILINE		190J	--	--
--	--	--	--	--	--
-	--				-

	FLUORANTHENE		92J	--	--
--	--	--	--	--	-
-	--				
	PYRENE		110J	--	--
--	--	--	--	--	-
-	--				
	CHRYSENE		180J	--	--
--	--	--	--	--	-
-	--				
	(3-AND/OR 4-)METHYLPHENOL				
--	--	--			
--	--	--			
--	--	300J			
--					
	PHENOXYBIPHENYL (2 ISOMERS)		900JN	--	--
--	--	--	--	--	-
-	--				
	HEXACHLOROBIPHENYL (2 ISOMERS)		700JN	--	--
--	--	--	--	--	-
-	--				
	(DIETHYLAMINO)PHENYLMETHANONE		500JN	--	--
--	--	--	--	--	-
-	--				
	AMINOANTHRACENEDIONE		--	80JN	--
--	--	--	--	--	-
-	--				
	DECAHYDROTRIMETHYLMETHYLENEMETHANO		--	--	--
--	--	--	--	--	-
-	--				
	AZULENE		--	--	--
2000JN	--	--	--	--	-
-	--				
	HEXAHYDROHYDROXYTRIMETHYL(METHYLETHYL)		--	--	--
--	--	--	--	--	-
-	--				
	PHENANTHRENONE (2 ISOMERS)		--	--	--
1000JN	--	--	--	--	-
-	--				
	CEDROL		--	--	--
1000JN	--	--	--	--	-
-	--				
	YLANGENE		--	--	--
400JN	--	--	--	--	-
-	--				
	THUJOPSENE		--	--	--
500JN	--	--	--	--	-
-	--				
	QUATERPHENYL		300JN	--	--
--	--	2000JN	4000JN	400JN	-
-	--				
	METHYLBENZOIC ACID		--	--	--
--	--	--	--	--	
700JN	--				
	OXYBISBENZENE		700JN	--	--

--	--	--	2000JN	--	
600JN	--				
	CHLOROBIPHENYLOL				
--	--	--			
--	--	--			
--	--	600JN			
--					
	PHENOXYBIPHENYL				
--	--	--			
--	--	--			
--	--	600JN			
--					
	QUATERPRENYL (3 ISOMERS)				
--	--	--			
--	--	--			
--	--	--			
	5 UNIDENTIFIED COMPOUNDS		--	--	--
--	--	10000J	--	--	--
-	10000J				-
	9 UNIDENTIFIED COMPOUNDS				
8000JN	--	--			
--	--	--			
--	--	20000J			
--					
	11 UNIDENTIFIED COMPOUNDS		--	--	
200000J	--	--	--	--	-
-	--	--			
	13 UNIDENTIFIED COMPOUNDS		--	--	--
20000J	--	--	--	8000J	-
-	--				
	15 UNIDENTIFIED COMPOUNDS		--	--	--
--	--	--	70000J	--	-
-	--				
	17 UNIDENTIFIED COMPOUNDS		--	--	--
--	--	--	--	--	-
-	80000J				
	PETROLEUM PRODUCT		--	--	--
--	--	N	--	N	N
--					

FOOTNOTES

- J - ESTIMATED VALUE
- N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
MATERIAL WAS ANALYZED FOR BUT NOT DETECTED

Appendix A-3

Soil Analytical Data Summary (cont)

Carolawn

Ft. Lawn, South Carolina

		8-SLA	9-SLA	10-SLA	11-SLA
11-SLB	12-SLA	13-SLA	13-SLB	14-SLA	
15-SLA	15-SLB				
		04/26/94	04/26/94	04/26/94	04/26/94
04/26/94	04/26/94	04/26/94	04/26/94	04/26/94	
04/26/94	04/26/94				
INORGANIC ELEMENTS		MG/KG	MG/KG	MG/KG	MG/KG
MG/KG	MG/KG				
MG/KG	MG/KG				
--	SILVER	--	--	--	--
--	--	--	--	--	--
-	2.8JN				-
	ARSENIC	2.2	--	--	4.3
4.3	--		3.5	--	3.4
2.4	1.6J				
	BARIUM	110	94	160	88
140	220		77	170	77
51	52				
	BERYLLIUM	0.84J	0.51J	0.92J	0.74J
--	0.88J		0.80J	0.89J	0.42J
0.35J	0.713				
	COBALT	13	12	21	7.7J
10	20		18	12	22
10	9.5				
	CHROMIUM	54	32	33	33
9.3	47		69	41	75
38	40				
	COPPER	93	39	--	47
33	60		75	39	71
-	--				-
	NICKEL	17	6.6	36	9.5J
9.3	29		26	45	8.5
6.2	12				
	LEAD	91	52	6.7	59
11J	92J		89J	2.9J	120J
70J	33J				
	VANADIUM	65	59	69	58
69	72		75	63	72
42	140				
	ZINC	50J	--	--	--
37	47		38	43	36
-	--				-
	MERCURY	0.76	--	--	--
--	0.73		--	--	0.59
0.32	--				
	ALUMINUM	15000	10000	15000	15000
23000	18000		14000	19000	13000

8300		31000						
	MANGANESE		230		610		340	210
190		430		550		160		690
160		160						
	CALCIUM		2800		1100		3600	1700
1400		5400		2900		5300		870
1700		--						
	MAGNESIUM		4000		1700		8300	4600
6700		8700		5000		13000		900
1400		1600						
	IRON		20000		18000		23000	20000
25000		25000		24000		24000		24000
13000		50000						
	SODIUM		--		--		--	--
--		--		--		--		--
-		160						-
	POTASSIUM		820		720		3000	1600
3000		4200		530		360		360
540		1000						

FOOTNOTES

J - ESTIMATED VALUE

-- - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED

Appendix A-4

Soil Analytical Data Summar

(cont)

Carolawn
Ft. Lawn, South

Carolina

11-SLB	12-SLA	13-SLA	13-SLB	14-SLA	8-SLA 15-SLA 04/26/94	9-SLA 15-SLB 04/26/94	10-SLA 04/26/94	11-SLA 04/26/94
04/26/94	04/26/94	04/26/94	04/26/94	04/26/94	04/26/94	04/26/94	04/26/94	04/26/94
PURGEABLE ORGANIC COMPOUNDS					UG/KG	UG/KG	UG/KG	UG/KG
UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
TETRACHLOROETHENE (TETRACHLOROETHYLENE)					10J	--	--	--
--	--	--	--	--	--	--	--	--
PESTICIDE/PCB COMPOUNDS					UG/KG	UG/KG	UG/KG	UG/KG
UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
PCB-1254 (AROCOR 1254)					480	--	--	77
--	--	--	75	28J	--	--	--	--

FOOTNOTES

J - ESTIMATED VALUE
 -- - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED

Appendix A-5

Soil Analytical Data Summary (cont)

Carolawn

Ft. Lawn, South Carolina

SLA	11-SLA	11-SLB	8-SLA	9-SLA	10-
SLB	14-SLA	15-SLA	12-SLA	13-SLA	13-
			15-SLB		
			04/26/94	04/26/94	
04/26/94	04/26/94	04/26/94	04/26/94	04/26/94	
04/26/94	04/26/94	04/26/94	04/26/94		
EXTRACTABLE ORGANIC COMPOUNDS			UG/KG	UG/KG	
UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	
UG/KG	UG/KG	UG/KG	UG/KG		
BIS(2-ETHYLHEXYL) PHTHALATE					
--	--	--			
--	--	--			
--	--	--			
--	--				
METHYLIDYNEBENZENE			300JN	--	--
--	--	--	--	--	-
-	--	--			
QUATERPHENYL (3 ISOMERS)			1000JN	--	--
--	--	--	--	--	-
-	--	--			
PHENYLTERPHENYL			300JN	--	--
--	--	--	--	--	-
-	--	--			
DECAHYDROTRIMETHYLNETHANOAZULENE			--	800JN	--
--	--	--	--	--	-
-	--	--			
HEXAHYDROHYDROXYTRIMETHYL (METHYLETHYL)			--	--	--
--	--	--	--	--	-
-	--	--			
PHENANTHRENOL (2 ISOMERS)			--	--	
900JN	--	--	--	--	-
-	--	--	--		
HEXAHYDROHYDROXYTRIMETHYL (METHYLETHYL)			--	--	--
--	--	--	--	--	-
-	--	--			
PHENANTHRENONE			--	300JN	
100JN	--	--	--	--	-
-	--	--	--		
METHYLHEXADIENE			--	--	--

300JN	--	--	--	--	--
-	--	--			
PENTADECANOIC ACID			--	--	--
300JN	--	--	--	--	--
-	--	--			
PHENANTHRENOL (2 ISOMERS)			--	--	--
400JN	--	--	--	--	--
-	--	--			
METHYLBENZENESULFONAMIDE			--	--	--
--	--	300JN	--	--	--
-	--	--			
DICHLORONITROANILINE			--	--	--
--	--	--	70JN	--	--
-	--	--			
DIISOCYANATOMETHYLBENZENE			--	--	--
--	--	--	--	--	--
200JN	--	--			
DECAHYDROTRIHETHYLMETHYLENEMETHANO			--	--	--
--	--	--	--	--	--
-	--	--			
AZULENE			--	--	--
--	--	--	--	--	--
500JN	--	--			
COPAENE					
--	--	--			
--	--	--			
--	--	200JN			
-	--	--			
CHLORO (PHENYLENETHYL) PHENOL					
--	--	--			
--	--	--			
--	--	200JN			
-	--	--			
OCTAHYDROTRIMETHYL (METHYLETHYL)			--	--	--
--	--	--	--	--	--
-	--	--			
PHENANTHRENOL					
--	--	--			
--	--	--			
--	--	1000JN			
-	--	--			
CHLORO (PHENYLMETHYL) PHENOL			--	--	--
--	--	--	--	--	--
-	70JN	--			
OCTAHYDROTRIMETHYL (METHYLETHYL) PHENANTHRENOL			--	2000JN	--
--	--	--	--	--	--
-	200JN	--			
AMINOANTHRACENEDIONE			--	800JN	--
--	--	--	200JN	--	--
-	100JN	--			
HEXADECANOIC ACID			--	--	--
80JN	--	--	--	--	--
-	--	200JN	300JN		
1 UNIDENTIFIED COMPOUND			--	2000J	--

--	--	--	4000	--	-
-	--	1000J			
2 UNIDENTIFIED COMPOUNDS			--	--	--
--	--	--	--	--	-
-	1000J	--			
4 UNIDENTIFIED COMPOUNDS			--	--	--
2000J	--	6000J	--	--	-
-	--	--			
5 UNIDENTIFIED COMPOUNDS			--	--	--
--	--	--	--	--	
3000J	--	--			
8 UNIDENTIFIED COMPOUHDS			--	--	--
--	--	--	--	--	-
-	--	--			
PETROLEUM PRODUCT			--	--	--
--	--	--	--	--	-
-	--	--			

FOOTNOTES

J - ESTIMATED VALUE
N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
-- - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED

Appendix A -6

					Soi
Analytical Data Summary (cont)					
Carolawn					
					Ft.
Lawn, South Carolina					
	16-SLA	17-SLA	18-SLA	19-SLA	
20-SLA	21-SLA	22-SLA	23-SLA	24-SLA	
25-SLA					
	04/26/94	04/26/94	04/26/94	04/27/94	
04/27/94	04/27/94	04/26/94	04/26/94	04/26/94	
04/26/94					
INORGANIC ELEMENTS	MG/KG	MG/KG	MG/KG	MG/KG	
MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	
MG/KG					
ARSENIC	1.9J	--	--	1.7J	
--	--	3.6	2.2J	1.8J	
1.9J					
BARIUM	43	43J	37J	52J	
50J	31J	120	89	38	
55					

0.80J 0.45J	BERYLLIUM	0.42J	--	--	0.46J	0.49J	0.58J	
8.2 23	COBALT	5.8	24	10	15	6.7	13	7.7
28 58	CHROMIUM	28	28	21	79	12	34	40
-- -	COPPER	40	--	--	81	--	--	--
8.7 4.7J	NICKEL	3.8	12	9.5	3.9	13	4.1	12
9.8 18J	LEAD	45J	17	7.7	69J	6.3	13J	73
63 63	VANADIUM	59	65	32	39	22	48	60
-- -	ZINC	--	--	--	--	--	--	24
14000 13000	ALUMINUM	11000	14000	7400	7800	6300	9500	14000
89 500	MANGANESE	100	1100	130	740	130	360	120
-- -	CALCIUM	--	1900	850J	1100	830J	--	--
2500J 590	MAGNESIUM	1100	3300	2000J	640	2300J	480	2400J
24000 23000	IRON	20000	21000	13000	12000	8700	16000	24000
1200 380	POTASSIUM	450	1300	630	320	300	280	840

FOOTNOTES

- J - ESTIMATED VALUE
- - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED

Soil Analytical Data Summary (cont
Carolawn
Ft. Lawn, South Carolina

22-SLA	23-SLA	24-SLA	16-SLA 25-SLA	17-SLA	18-SLA	19-SLA	20-SLA	21-SLA
04/26/94	04/26/94	04/26/94	04/26/94	04/26/94	04/26/94	04/27/94	04/27/94	04/27/94
PURGEABLE ORGANIC COMPOUNDS			UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
UG/KG	UG/KG	UG/KG	UG/KG					
TOLUENE			5J	--	12	--	--	--
--	--	9J	--					

PESTICIDE/PCB COMPOUNDS NONE DETECTED

* * * FOOTNOTES* * *

J - ESTIMATED VALUE
-- - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED

Appendix A-8

Soil Analytical Data Summary (cont)

Carolawn

Ft. Lawn, South Carolina

19-SLA	20-SLA	21-SLA	16-SLA 22-SLA	17-SLA 23-SLA	18-SLA
24-SLA	25-SLA		04/26/94	04/26/94	
04/26/94	04/27/94	04/27/94	04/27/94	04/26/94	
04/26/94	04/26/94	04/26/94			
EXTRACTABLE ORGANIC COMPOUNDS			UG/KG	UG/KG	UG/KG
UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	
UG/KG	UG/KG				
--	--	--			
DIISOCYANATOMETHYLBENZENE			200JN	--	--
--	--	--	--	--	--
DECAHYDROTRIMETHYLMETHANOAZULENE			--	3000JN	200JN
--	--	--	--	--	--
(DINETHYLETHYL)METHYLPHENOL			--	--	--
1000JN	--	--	--	--	--
--	--				
(HYDROXYPHENYL)ETHANONE			--	--	--

--	--	--	100JN	--	-
-	--				
	DECAHYDROTRIMETHYLMETHYLENE	--	--	--	--
--	--	--	--	--	-
-	--				
	METHANOAZULENE	--	--	--	--
--	--	--	100JN	--	-
-	--				
	(HYDROXYMETHYL) ETHANONE	--	--	--	--
--	--	--	100JN	--	-
-	--				
	PHENANTHRENOL	--		5000JN	--
1000JN	--	--	400JN	--	-
-	--				
	HEXAHYDROHYDROXYTRIMETHYL (METHYLETHYL)	--	--	--	--
--	--	--	--	--	-
-	--				
	DECAHYDROTRIMETHYLMETHYLENEMETHANO	--	--	--	--
--	--	--	--	--	-
-	--				
	AZULENE				
--	--	--			
--	--	--			
--	200JN	900JN			
--	--				
	COPAENE	--	--	--	--
--	--	--	--	--	
200JN	--				
	HEXADECANOIC ACID	--	--	--	--
--	--	--	200JN	400JN	
200JN	--				
	OCTAHYDROTRIMETHYL (METHYLETHYL) PNENANTHRENE				
--	--	--			
--	--	--			
--	--	100JN			
--	--				
	OCTAHYDROTRIMETHYL (METHYLETHYL) PHENANTHRENOL				
1000JN	--	300JN			
--	--	--			
--	--	--			
--	--				
	(2 ISOMERS)				
--	--	--			
--	--	--			
--	--	2000JN			
--	--				
	DECAHYDROTRIMETHYLMETHYLENEMETHANOAZULENE				
--	--	--			
--	--	--			
--	--	--			
700JN	--				
	THUJOPSENE				
--	--	--			
--	--	--			

--	--	--			
300JN					
OCTADECANOIC ACID	--	--			300JN
--	--	--	--	--	-
300JN					
OCTAHYDROTRIMETHYL (METHYLETHYL)	--	--		--	--
--	--	--	--	--	-
--	--				
PHENANTHRENOL (2 ISONERS)					
--	--	--			
3000JN	3000JN				
--	--	--			
5000JN					
METHYL (TRIMETHYLCYCLOPENTYL) BENZENE					
--	300JN	--			
--	--	--			
--	--	--			
300JN					
OCTAHYDRODIMETHYL (METHYLETHYL) PHENANTHRENE	--	--		--	--
--	--	--	--	--	-
--	--				
CARBOXYLIC ACID, METHYLESTER					
--	--	--			
--	--	--			
--	--	--			
400JN					
HEXAHYDROHYDROXYTRIMETHYL (METHYLETHYL)	--	--		--	--
--	--	--	--	--	-
--	--				
PHENANTHRENONE					
--	700JN	--			
--	300JN	--			
--	300JN	200JN			
300JN					
2 UNIDENTIFIED COMPOUNDS	--	--		--	--
--	--	--	1000J	--	-
--	--				
3 UNIDENTIFIED COMPOUNDS			10000J	--	2000J
--	--	--	--	--	
1000J	--				
4 UNIDENTIFIED COMPOUNDS	--	--		3000J	--
--	--	--	--	--	-
--	--				
5 UNIDENTIFIED COMPOUNDS	--	--		--	--
--	7000J	--	--	5000J	-
--	--				
6 UNIDENTIFIED COMPOUNDS					
--	--	--			
--	--	--			
--	--	--			
5000J					
9 UNIDENTIFIED COMPOUNDS	--	--		--	--
8000J	--	--	--	--	-
--	--				

11 UNIDENTIFIED COMPOUNDS	--	--	--	--
--	--	10000J	--	--
-	--			-

FOOTNOTES

J - ESTIMATED VALUE
 N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
 -- - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED

Appendix A-9

Analytical Data Summary (cont)

Soi

Carolawn

Ft.

Lawn, South Carolina

	26-SLA	26-SLB	27-SLA	28-SLA	
29-SLA	30-SLA	31-SLA	32-SLA	33-SLA	
33-SLB					
	04/27/94	04/27/94	04/27/94	04/27/94	
04/26/94	04/27/94	04/27/94	04/27/94	04/27/94	
04/27/94					
INORGANIC ELEMENTS	MG/KG	MG/KG	MG/KG	MG/KG	
MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	
MG/KG					
ARSENIC	2.6	4	--	2J	
--	2.8	1.9J	2J	2.5	-
-					
BARIUM	53J	200J	40J	24J	
35	66J	50J	36J	54J	
100J					
BERYLLIUM	0.77J	4.1JN	0.41J	0.44J	
0.38J	1.2	0.61J	0.48J	0.62J	
1J					
COBALT	8.1	28	3.5	2.1	
8	8.6	3.7	2.9	5.2	
14					
CHROMIUM	25	16	16	13	
21	21	17	14	28	
93					
COPPER	--	--	--	17	
--	--	--	--	--	-
-					
NICXEL	7.3	18	4.8	3.6	
--	8.3	4.7	2.4J	6.6	

56	LEAD	20	--	14	6.5
9.8J	15	12	13	11	
6.7	VANADIUM	69	110	45	41
44	100	44	53	97	
73	ZINC	--	65	--	--
9.6	--	--	15	--	--
53	ALUMINUM	16000	16000	14000	9000
7600	23000	10000	10000	20000	
25000	MANGANESE	82	300	56	18
210	84	64	30	70	
140	CALCIUM	940J	5600J	--	--
--	--	370J	--	--	--
-	MAGNESIUM	1600J	9200J	920J	370J
620	1700J	480J	420J	1400J	
11000J	IRON	25000	41000	17000	14000
14000	35000	17000	18000	35000	
34000	POTASSIUM	790	5200	710	240
310	940	410	240	820	
1500					

FOOTNOTES

J - ESTIMATED VALUE
 N - PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
 -- - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED

Ap

pendix A -10

Soil Analytical Data Summary (cont)

Carolawn

Ft. Lawn, South Carolina

SLA	28-SLA	29-SLA	26-SLA	26-SLB	27-
SLA	33-SLA	33-SLB	30-SLA	31-SLA	32-
04/27/94	04/27/94	04/26/94	04/27/94	04/27/94	
			04/27/94	04/27/94	

04/27/94	04/27/94	04/27/94			
EXTRACTABLE ORGANIC COMPOUNDS			UG/KG	UG/KG	
UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	
UG/KG	UG/KG	UG/KG			
OCTADECANOIC ACID			--	300JN	--
--	--	--	--	--	-
OCTAHYDRODIMETHYL (METHYLETHYL) PHENANTHRENE			--	--	--
--	--	--	--	--	-
CARBOXYLIC ACID, METHYLESTER			--	300JN	--
--	--	--	--	--	-
OCTAHYDRODIMETHYL (METHYLETHYL)			--	--	--
--	--	--	--	--	-
PHENANTHRENECARBOXYLIC ACID, METHYLESTER			--	--	
300JN	--	--	--	--	-
OCTAHYDROTRIMETHYL (METHYLETHYL) PHENANTHRENOL			--	--	--
--	--	--	--	--	-
(2 ISOMERS)			--	--	--
4000JN	--	--	--	--	-
OCTAHYDROMETHYLMETHYLENE (METHYLETHYL)			--	--	--
--	--	--	--	--	-
METHANOINDENE			--	--	--
--	600JN	--	--	--	-
DECAHYDROTRIMETHYLMETHYLENEMETHANOAZULENE			--	--	--
--	3000JN	--	--	--	-
OCTAHYDRODIMETMYL (METHYLETHYL) PHENANTHRENE			--	--	--
--	--	--	--	--	-
CARBOXYLXC ACID, METHYLESTER			--	--	--
--	1000JN	--	--	--	-
YLANGENE			--	--	--
--	--	200JN	--	--	-
OCTAHYDROTETRAMETHYLCYCLOPROPANAPHTHALENONE			--	--	--
--	--	300JN	--	--	-
CEDROL			--	400JN	--
--	--	--	400JN	--	-
THUJOPSENE			--	--	--
--	900JN	200JN	400JN	--	-
--	--				

METHYL (TRIMETHYLCYCLOPENTYL) BENZENE	--	--	--
800JN	500JN	--	-
HEXAHYDROTRIMETHYL (METHYLETHYL)	--	--	--
PHENANTHRENONE	--	--	--
400JN	--	-	
PHENANTHRENOL	--	4000JN	--
3000JN	7000JN	--	
200JN			
DECAHYDROTRIMETHYLMETHANOAZULENE			
900JN			
500JN			
1000JN			
900JN			
900JN			
HEXADECANOIC ACID			
400JN			
700JN			
600JN	600JN		
OCTADECENOIC ACID			
800JN	800JN		
OCTAHYDROTRIMETHYL (METHYLETHYL)	--	--	--
PHENANTHRENOL (2 ISOMERS)			
3000JN			
6000JN			
4000JN			
4000JN			
OCTAHYDRODIMETHYL (METHYLETHYL) PHENANTHRENE	--	--	--
CARBOXYLIC ACID, METHYLESTER (2 ISOMERS)			
1000JN	1000JN		
1 UNIDENTIFIED COMPOUND			
200J			
2000J	--		
2 UNIDENTIFIED COMPOUNDS	2000J	--	--
3 UNIDENTIFIED COMPOUNDS	--	--	--

--	--	3000JN	--	--	-
-	--				
4 UNIDENTIFIED COMPOUNDS			--	--	
6000J	--	--	--	--	-
-	--	--			
7 UNIDENTIFIED COMPOUNDS			--	4000J	--
--	--	--	--	--	-
-	4000J				
9 UNIDENTIFIED COMPOUNDS			--	--	--
--	--	--	7000J	--	-
-	--				
12 UNIDENTIFIED COMPOUNDS			--	--	--
10000J	--	--	--	--	-
-	--				

FOOTNOTES

J	-	ESTIMATED VALUE
N	-	PRESUMPTIVE EVIDENCE OF PRESENCE OF MATERIAL
--	-	MATERIAL WAS ANALYZED FOR BUT NOT DETECTED

Appendix A -11

Soi

Analytical Data Summary (cont)

Carolawn

Ft.

Lawn, South Carolina

		26-SLA	26-SLB	27-SLA	28-SLA
29-SLA	30-SLA	31-SLA	32-SLA	33-SLA	
33-SLB					
		04/27/94	04/27/94	04/27/94	
04/27/94	04/26/94	04/27/94	04/27/94	04/27/94	
04/27/94	04/27/94				
PURGEABLE ORGANIC COMPOUNDS		UG/KG	UG/KG	UG/KG	UG/KG
UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	
UG/KG					
TOLUENE		--	--	--	--
--	2J	--	--	--	--
-					

PESTICIDE/PCB COMPOUNDS NONE DETECTED

FOOTNOTES

J	-	ESTIMATED VALUE
---	---	-----------------

-- - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED

Appendix A -12

Soi

Analytical Data Summary (cont)

Carolawn

F

t. Lawn, South Carolina

	34-SLA	35-SLA	35-SLB	36-SLA
37-SLA	38-SLA	39-SLA	40-SLA	41-SLA
45-SLA	45-SLB			
	04/27/94	04/27/94	04/27/94	04/26/94
04/26/94	04/26/94	04/26/94	04/26/94	04/26/94
10/25/94	10/25/94			
INORGANIC ELEMENTS	MG/KG	MG/KG	MG/KG	MG/KG
MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
MG/KG	MG/KG			
ARSENIC	2.6	--	--	1.8J
5.7	2.3J	2.9	2.9	23
-	--			
BARIUM	52J	40J	36	51
72	130	98	85	140
100	58			
BERYLLIUM	--	0.55J	--	0.42J
0.51J	0.89J	1.1J	0.49J	--
-	--			
COBALT	13	4.9	3.2	8.8
12	18	22	8.9	7.3
12	5.3			
CHROMIUM	14	62	15	32
38	34	85	33	220
14	42			
COPPER	20	--	20	15
--	49	30	--	68
30	39			
NICKEL	2J	--	3.5	3.3J
8.9	26	14	7	8.7
11	20			
LEAD	15	9.7	8	15J
14J	14J	17J	9.7J	280J
22	7.7			
STRONTIUM	NA	NA	NA	NA
NA	NA	NA	NA	NA
47	34			
TITANIUM	NA	NA	NA	NA
NA	NA	NA	NA	NA
1200	720			

	VANADIUM	46	47	72	45
49		75	120	57	31
76		34			
	YTTRIUM	--	--	--	--
--		--	--	--	--
13		11			
	ZINC	--	--	--	--
--		--	--	--	110
38		34			
	MERCURY	--	--	--	--
--		--	--	--	--
0.32		0.17			
	ALUMINUM	9300	7800	25000	9200
8600		17000	14000	10000	10000
20000		14000			
	MANGANESE	120	66	40	410
430		360	590	270	230
230		120			
	CALCIUM	--	--	--	800
1900		3300	1500	1400	49000
2900		830			
	MAGNESIUM	510J	--	1100J	520
2100		6500	2600	2500	26000
4800		3000			
	IRON	17000	20000	29000	15000
15000		24000	34000	17000	16000
25000		15000			
	POTASSIUM	400	250	830	310
780		1800	750	920	2200
2400		2300			
	SODIUM	--	--	--	--
--		--	--	--	--
-		200			-

* * *FOOTNOTES* * *					
J - ESTIMATED VALUE					
-- - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED					
NA - NOT ANALYZED					

Appendix A -13

Soil Analytical Data Summary (cont)

Carolawn

Ft. Lawn, South Carolina

			34-SLA	35-SLA
35-SLB	36-SLA	37-SLA	38-SLA	39-SLA
40-SLA	41-SLA	45-SLA	45-SLB	

04/27/94	04/26/94	04/26/94	04/27/94	04/27/94	
04/26/94	04/26/94	10/25/94	04/26/94	04/26/94	
04/26/94	04/26/94	10/25/94	10/24/94		
EXTRACTABLE ORGANIC COMPOUNDS			UG/KG	UG/KG	
UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	
UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	
4-NITROANILINE			--	--	
--	--	--	--	--	-
3800J		--	--		
OCTAHYDRODIMETHYL (METHYLETHYL) PHENANTHRENE			--	--	
--	--	--	--	--	-
--	--	--	--		
CARBOXYLIC ACID, METHYLESTER (2 ISOMERS)			600JN	--	
--	--	--	--	--	-
--	--	--	--		
DECAHYDROTRIMETHYLMETHANOAZULENE			--	500JN	
--	--	--	--	--	-
--	--	--	--		
METHYL (TRIMETHYLCYCLOPENTYL) BENZENE			--	100JN	
--	--	--	--	--	-
--	--	--	--		
HEXADECANOIC ACID			--	--	
500JN	--	--	--	--	-
--	--	--	--		
HEXAHYDRODIMETHYL (METHYLETHYL)			--	--	
--	--	--	--	--	-
--	--	--	--		
NAPHTHALENE			--	--	
--	100JN	--	--	--	-
--	--	--	--		
OCTAHYDROTRIMETHYL (METHYLETHYL)			--	--	
--	--	--	--	--	-
--	--	--	--		
HEXAHYDROXYTRIMETHYL (METHYLETHYL) PHENANTHRENONE			--	--	
--	100JN	--	--	--	-
--	--	--	--		
(DIMETHYLETHYL) PHENOL			--	--	
--	--	500JN	--	--	-
--	--	--	--		
DECAHYDROTRIMETHYLMETHYLENEMETHANOAZULENE			--	--	
--	--	--	300JN	--	-
--	--	--	--		
OCTAHYDROTRIMETHYL (METHYLETHYL)			--	--	
--	--	--	--	--	-
--	--	--	--		
PHENANTHRENOL (2 ISOMERS)			--	--	
--	700JN	--	5000JN	--	-
--	--	--	--		
METHYLTRIMETHYLCYCLOPENTYLBENZENE			--	--	
--	--	--	--	200JN	-
--	--	--	--		
METHYLPHENYLANTHRACENEDIONE			--	--	
--	--	--	--	1000JN	-

-	--	--	--	--	-
	HEXAHYDROHYDROXYTRIMETHYLMETHYLETHYL		--	--	
--	--	--	--	--	--
-	--	--	--	--	--
	OCTAHYDROTRIMETHYL (METHYLETHYL) PHENANTHRENOL		300JN	--	
--	--	--	--	7000JN	--
-	--	--	--	--	--
	DECAHYDROTRIMETHYLMETHYLENEMETHANO		--	--	
--	--	--	--	--	--
-	--	--	--	--	--
	AZULENE		--	--	
--	--	--	--	1000JN	--
2000JN	--	--	--	--	--
	CEDROL		--	--	
--	--	--	--	--	--
400JN	--	--	--	--	--
	THUJOPSENE		--	--	
--	--	--	--	--	--
300JN	--	--	--	--	--
	METHYL (TRIMETHYLCYCLOPENTYL) METHYLBENZENE		--	--	
--	--	--	--	--	--
300JN	--	--	--	--	--
	OCTAHYDROTRIMETHYL (METHYLETHYL) PHENANTHRENONE		--	--	
--	--	--	--	--	--
-	--	--	--	--	--
	(2 ISOMERS)		--	2000JN	
--	--	--	--	--	--
7000JN	--	--	--	--	--
	HEXAHYDROHYDROXYTRIMETHYL (METHYLETHYL)		--	--	
--	--	--	--	--	--
-	--	--	--	--	--
	PHENANTHRENONE		--	--	
--	--	--	1000JN	800JN	--
600JN	--	--	--	--	--
	(DIMETHYLETHYL) METHYLPHENOL		--	--	
300JN	--	--	--	--	--
-	10000JN	--	--	--	--
	ANTHRACENEDIONE		--	--	
--	--	--	--	--	--
-	6000JN	--	--	--	--
	1 UNIDENTIFIED COMPOUND		--	--	
--	--	1000J	--	--	--
-	--	--	--	--	--
	2 UNIDENTIFIED CONPOUNDS		--	300J	
--	4000J	--	--	--	--
-	--	--	--	--	--
	5 UNIDENTIFIED COMPOUNDS		8000J	--	
--	--	--	--	--	--
-	--	--	--	--	--
	6 UNIDENTIFIED COMPOUNDS		--	--	
10000J	--	--	--	--	--
-	--	--	--	--	--
	8 UNIDENTIFIED COMPOUNDS		--	--	
--	--	--	--	--	--

FOOTNOTES

J - ESTIMATED VALUE
 -- - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED

Appendix A -15

		Analytical Data Summar	
		Carolawn	
		Ft. Lawn, South Carolina	
		1-SD	2-SD
3-SD	4-SD		
04/26/94	04/26/94	04/26/94	04/26/94
INORGANIC ELEMENTS			
MG/KG	MG/KG	MG/KG	MG/KG
ARSENIC		--	--
0.91J	--		
BARIUM		--	--
24	--		
BERYLLIUM		0.30J	--
-	--		
COBALT		1.4J	3.1
3.3	3.7		
CHROMIUM		7.1	11
15	6		
LEAD		1.8	2.1J
2.1J	1.8		
VANADIUM		15	13
18	12		
ZINC		--	--
-	14		
ALUMINUM		1100	1600
1500	1100		
MANGANESE		270	290
310	250		
IRON		6200	5100
7800	5500		
POTASSIUM		76	88
62	140		
PURGEABLE ORGANIC COMPOUNDS		NONE DETECTED	
PESTICIDE/PCB COMPOUNDS		NONE DETECTED	
EXTRACTABLE ORGANIC COMPOUNDS		UG/KG	UG/KG
UG/KG	UG/KG		
OCTAHYDROMETHYLMETHYLENE (METHYLETHYL) NAPHTHALENE		--	--
-	600JN		
OCTADECENOIC ACID		--	--
			-

-	900JN			
	OCTADECANOIC ACID	--	--	-
-	900JN			
	OCTAHYDROTRIMETHYL (METHYLETHYL) PHENANTHRENOL	--	--	-
-	--			
	(2 ISOMERS)	--	--	-
-	8000JN			
	15 UNIDENTIFIED COMPOUNDS	--	--	-
-	20000J			
	1 UNIDENTIFIED COMPOUND	--	900J	-
-	--			

FOOTNOTES

J - ESTIMATED VALUE
 -- - MATERIAL WAS ANALYZED FOR BUT NOT DETECTED

Appendix A -16

Surface Water Analytical Data Summary

Carolawn

- Ft. Lawn, South Carolina

201-SW	401 -TB	1-SW 04/26/94 04/26/94	2-SW 04/26/94	3-SW 04/26/94	4-SW
	04/26/94	04/25/94			
INORGANIC ELEMENTS		UG/L	UG/L	UG/L	UG/L
UG/L	UG/L				
32	BARIUM	33	29	32	30
93	STRONTIUM	95	86	93	89
7.4	TITANIUM	7.3	6.2	6.2	5.8
310	ALUMINUM	350	280	260	240
59	MANGANESE	60	52	53	59
	NA				
		MG/L	MG/L	MG/L	MG/L
9.1	CALCIUM	9.3	8.4	9.1	8.6
3.8	MAGNESIUM	3.8	3.5	3.8	3.6
0.85	IRON	0.88	0.76	0.80	0.69
	NA				

7.8	SODIUM	NA	7.9	7.2	7.9	7.6
1.6	POTASSIUM	NA	1.5	1.4	1.6	1.5

PURGEABLE ORGANIC COMPOUNDS	NONE DETECTED
PESTICIDE/PCB COMPOUNDS	NONE DETECTED
EXTRACTABLE ORGANIC CONFOUNDS	NONE DETECTED

FOOTNOTES

NA = NOT ANALYZED

Appendix A -17

Field Parameter Data Summar Carolawn Ft. Lawn, South Carolina

Sample Number	pH (SU)	Specific Conductance (umhos/cm@25øC)	Temperature (øc)
001-SW	6.9	202	19.5
002-SW	6.3	122	20.0
003-SW	6.3	121	21.6
004-SW	6.7	121	23.8

Appendix A -18

APPENDIX B - RESPONSIVENESS SUMMAR

RESPONSIVENESS SUMMAR CAROLAWN (OU2) SUPERFUND SITE

1. Overview

The U. S. Environmental Protection Agency (EPA) held a public comment period from July 24, 1995 to August 24, 1995, for interested parties to comment on the Remedial Investigations and the Baseline Risk Assessment results and the Proposed Plan for the Carolawn (OU2) Superfund Site in Fort Lawn, South Carolina. The comment period closed on August 24, 1995.

EPA held a public meeting at 7:00 p.m. on August 10, 1995 at the Lewisville Elementary School in Fort Lawn, South Carolina to

present the results of the Remedial Investigation and the Baseline Risk Assessment, to present the Proposed Plan and to receive comments from the public.

In the absence of any significant source of contamination in the soil, surface water and sediment at the Site, the No Action alternative was proposed by EPA to address the soil, surface water and sediment. In addition, a groundwater remedy has been selected under a Record of Decision for Carolawn (OU1). However, should future monitoring of the site (e.g. Five-Year Review) indicate that the site poses an unacceptable risk to the environment, then EPA, in consultation with the State of South Carolina, may initiate clean-up actions under the authority of CERCLA and in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan. Judging from the comments received during the public comment period, the residents and local officials in the Fort Lawn, South Carolina area support the cleanup alternative proposed by EPA.

The Responsiveness Summary provides a summary of citizens' comments and concerns identified and received during the public comment period, and EPA's response to those comments and concerns. These sections and attachments follow:

Background of Community Involvement

Summary of Comments Received During the Public
Comment Period and EPA's Responses

Attachment A: Proposed Plan for the Carolawn (OU2)
Superfund Site

Attachment B: Public Notices of Public Comment Period

Attachment C: Written Public Comments Received During
the Public Comment Period

Attachment D: Official Transcript of the Proposed Plan
Public Meeting

2. Background of Community Involvement

EPA's community relations program for the Site began in 1987, when EPA conducted community interviews in order to develop a community relations plan for the Site. At that time, residents living adjacent to the Site were concerned about the Site and about any health risks from the Site. In addition, residents did voice some concerns about lack of information to the public during the removal work at the Site and lack of response to earlier complaints about the Site.

Throughout EPA's involvement, the community has been kept aware and informed of Site activities and findings. Discussions have taken place during visits to the area by the Remedial Project Manager (RPM) and the Community Relations Coordinator (CRC). Concerned citizens and Local officials were briefed prior to the Proposed Plan Public Meeting held on August 10, 1995. The Site mailing list was expanded to include additional residents living in close proximity to the Site.

3. Summary of Comments Received During the Public Comment Period and Agency Responses

The Public Comment Period was opened on July 24, 1995 and was ended on August 24, 1995. Public Notices which were published in local papers can be found in Attachment B.

On August 10, 1995, EPA held a public meeting to present the Proposed Plan to the community and to receive comments thereupon. All comments received at this public meeting and during the public comment period are summarized below.

Summary and Response to Local Community Concerns

The following issues and concerns were expressed at the Proposed Plan Public Meeting, and during the public comment period.

COMMENT: Several citizens expressed a concern that the Remedial Investigation did not encompass the entire parcel of property of 60 acres and would like an additional investigation to take place on the adjacent acreage. Moreover, several citizens are apprehensive about the existence of buried drums and feel that an additional investigation would alleviate their concerns.

RESPONSE: Previous studies suggested that there were numerous sources of contamination at the Site. Based on those studies, several remedial actions have been performed to remove contaminated soils, drums (some buried) and liquid waste from the Site. While those levels of contamination were greatly reduced, several Remedial Investigations were warranted to fully delineate all contamination of known areas and to characterize the Site. Based on the information obtained from the operational history of the facility and the earlier investigations, including this Remedial Investigation, EPA has characterized the Site and the nature of its contaminants at all known areas of contamination. However, if further information (i.e., via the Citizen Advisory Group) suggests additional sources of contamination exist, EPA will investigate the area of concern to confirm the nature and extent of contamination on any of the remaining acreage.

COMMENT: An attendee requested EPA to appoint a committee from the community to participate with the agency in future efforts and

decisions for the Site.

RESPONSE: Based on citizen interest at the meeting, EPA will pursue the establishment of a Citizen Advisory Group for the Carolawn Site. Once this group is established, the Citizen Advisory Group will participate with EPA in future efforts and decisions for the Site. In addition, formation of the Citizens Advisory Group will increase dissemination of information and provide viable feedback from the community for on-going implementation issues as well as determining the need for additional investigation on the remaining acreage.

COMMENT: An attendee expressed a concern that the Carolawn Site was cited as one of 114 sites in the United States that most needed cleaning up.

RESPONSE: Upon completion of operational practices which occurred during the 1970's, the Carolawn property was an area covered with two incinerators, several storage tanks, two storage trailers and many drums (both inside and outside the 3-acre fenced area). During the early 1980 's, SCDHEC and EPA conducted several site investigations at the Carolawn Site. The results of these investigations showed the presence of trichlorethane (TCE) and other solvents in nearby residential wells. The results also indicated that the Site was contaminated with big levels of metals and organic compounds.

During the late 1970's and early 1980's, the Site could have been perceived as one of the worst sites in the United States. However, due to the elevated levels of contamination found and the potential threat for imminent damage to public health and/or the environment, EPA initiated cleanup activities at the Site on December 1, 1981. The cleanup activities continued through February 1982, and included removal of contaminated soils, drums (some buried), and

liquid wastes from the Site. Due to each of the response action that have occurred at the Site, the levels of contamination have been greatly reduced.

Currently, the Site does not pose an imminent threat to public health and/or the environment. However, the Site does pose a long-term threat to the public health through exposure to the groundwater. A remedy has been selected for groundwater remediation at the Site and is expected to be implemented in the near future.

COMMENT: An attendee inquired about whether or not there is additional funding to support any further testing of the other 60 acres of the Site.

RESPONSE: In response, EPA stated that the Agency's current status for funding is questionable. Based on budget cuts and the

occurrence of a Recision Bill that was passed this year to basically pull back funds allocated for 1995, Region IV has shut down some starts of some sites in other states that were ready to implement cleanup activities. As far as we know, EPA has funds for next year. However, the Agency does not know how long the Superfund program will have funds. Like other Federal agencies, funding for EPA has to be appropriated each year. Unfortunately, the Superfund Law does not expire, but the part of the Law that collects the tax that generates the money to fund the program does expire. Thus, the program could go on if there is funding in the trust fund to continue on. At this time, the agency is not sure about

~

reauthorization or when the Superfund Law will be reauthorized. Therefore, it is hard to commit to saying there will be funding for the kinds of investigations we would have to do. Currently, EPA will have to start prioritizing everything to the worst-case-first scenario. That being the case, further investigation of this Site might not break out as a worst-case-scenario if there are limited funds. EPA will try to obtain additional funds and continue to go forward and maybe even do some things in-house of a limited nature with the existing resources in-house. If the Agency has solid leads, we could also work through SCDHEC to try to pursue things

that way. At this point, it is an unanswerable question but, there are options available. We think the Agency will have funds, and we think that if there is a legitimate need, the Agency will go forward and investigate those things.

Attachment A

Proposed Plan for the Carolawn (0U2) Superfund Site

 SUPERFUND PROPOSED PLAN FACT SHEET
 Carolawn Superfund Site-Operable Unit Two
 Fort Lawn, Chester County, South Carolina

U.S. Environmental Protection Agency, Region IV, Atlanta, GA
July 1995

This fact sheet is one in a series designed to inform residents and local officials of the ongoing cleanup efforts to EPA during that time has at the Site. A number of terms specific to the Superfund	the Site only after the public and all information submitted been reviewed and considered.
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As outlined in section
process (printed in bold print) are defined in the glossary
encourages public participation
which begins on Page 12.
for addressing contamination

providing an opportunity for the
INTRODUCTION
proposed remedial actions.

alternative, or a change from the
The United States Environmental Protection Agency (EPA)
another, may be made if public
presents this Proposed Plan for no further action for the
indicate that such a change
Carolawn (OU2) Superfund Site ("the Site"), located in Fort
appropriate solution. The final
Lawn, Chester County, South Carolina. Contaminant levels
remedy will be documented
have been substantially reduced through implementation of
after EPA has taken into
soil and source area cleanup activities conducted through a
from the public. Upon timely
Removal Action which occurred December 1981 through
public comment period by 30
February 1982. In addition, a groundwater remedy has
been selected for Carolawn (OU1). Studies to date indicate
that there is minimal contamination remaining at the Site.
information that is explained in
Therefore, EPA is proposing that no further action is
Investigation Report dated
necessary at this Site to provide protection of human health
Risk Assessment Report dated
or the environment. This Proposed Plan identifies the
all other records utilized
reasoning for no further action and explains the rationale
specified in this document are
for this preference.

The EPA's decision for no further action represents a
Comment Period:
preliminary decision, subject to public review and comment
1995
under Section 117(a) of the Comprehensive Environmental
August 24, 1995
Response, Compensation, and Liability Act (CERCLA,
known as Superfund), as amended by the Superfund
Meeting
Amendment and Reauthorization Act (SARA) of 1986.
August 10, 1995
This Proposed Plan is being distributed to the public in
7:00 P.M.
order to solicit public input.
Lewisville High School

117(a) of CERCLA, EPA
by publishing Proposed Plans
at Superfund sites, and by
public to comment on the
Changes to the preferred
preferred alternative to
comments or additional data
would result in a more
decision regarding the elected
in a Record of Decision (ROD)
consideration all comments
request, EPA will extend the
additional days.
This fact sheet summarizes
greater detail in the Remedial
July 1995 and the Baseline
July 1995. These documents and
by EPA to make the proposal

Public

July 24,

Thursday,

Public

Date: Thursday,

Time:

Place:

EPA is initiating a thirty (30) day public comment period
 Richburg, SC
 from July 24, 1995 to August 24, 1995, to receive
 comments on this Proposed Plan, the Remedial
 comments or call:
 Investigation (RI) Report and the Baseline Risk
 Cynthia Peurifoy
 Assessment (BRA) Report. However, EPA will
 Protection Agency
 accommodate requests for informal briefings during the
 Remedial Branch
 week of the Proposed Plan meeting. EPA, in consultation
 Courtland St, NE
 with the South Carolina Department of Health and
 30365
 Environmental Control (SCDHEC), will select a remedy for
 435-9233

Provide written
 Yvonne Jones or
 US Environmental
 North Superfund
 345
 Georgia
 1-800-

contained in the administrative record for this Site. EPA
 Organic Chemical Company
 and SCDHEC encourage the public to review this
 up the SEPCO Plant in
 information, especially during the public comment period,
 part of this clean up effort,
 to better understand the Site, the Superfund process, and the
 the waste of approximately -
 intent of this Proposed Plan. The administrative record is
 Site. As payment for services
 available for public review during normal working hours,
 the plant in Clover, South
 locally at the site information repository, which is the
 Carolawn property.
 Lancaster County Library, the Chester County Library or in
 the Record Center at EPA, Region IV's office in Atlanta,
 Recycling and Disposal, Inc.
 Georgia (see page 11).
 controlled the site.

permit from SCDHEC for
 THIS PROPOSED PLAN:
 drums containing inert

was given approval to

1. Includes a brief history of the Site, the principle
 3-acre fenced portion of the
 findings of the RI and a summary of the Baseline
 SCRDI sold the 3-acre fenced
 Risk Assessment;
 Carolawn Company.

In January 1975, Columbia
 (COCC) was contracted to clean
 Clover, South Carolina. As
 COCC transported and stored
 2,000 drums at the Carolawn
 rendered during the cleanup of
 Carolina, COCC received the
 After 1975, South Carolina
 (SCRDI), a subsidiary of COCC,
 During 1978, SCRDI obtained a
 a one-time disposal of 300-400
 waste. In October 1978, SCRDI
 dispose of empty drums on the
 property. After the disposal,
 area of the site to the

2. Presents EPA's rationale for its preliminary began the construction of selection of the preferred alternative; and With conditional approval of

conducted with one incinerator;

3. Explains the opportunities for the public to incineration never developed. At the

comment on the alternative for the Carolawn site by the Carolawn Company, (OU2) Superfund Site.

contained a concrete loading dock,

tanks and drums, two

trailers, 14 storage tanks, and as ~-.

SITE DESCRIPTION AND HISTORY
liquid and solid wastes. An

storage tanks were located

The Carolawn Site, located on approximately 60-acres of north. In 1979, SCRDI was land, is an abandoned, waste storage and disposal facility would have to clean up the located in Fort Lawn, Chester County, South Carolina. The site is situated less than three miles west of Fort Lawn, and approximately one-half mile south of South Carolina SCDHEC and EPA conducted site Highway 9 (see Figure 1.1). Rural and agricultural areas site. These investigations surround much of the site. The Lancaster & Chester environmental and private residential Railroad and County Road 841 border the site to the south results of these and Fishing Creek borders the site to the east. Wooded presence of trichloroethane (TCE) areas and cultivated fields lie to the west and north of the residential wells. The results site.

was contaminated with high

compounds. Due to the

The Carolawn site was originally owned by the contamination found and the potential Southeastern Pollution Control Company (SEPCO) of public health and/or the Charlotte, North Carolina. Beginning in 1970, SEPCO used cleanup activities at the site on the site as a storage facility for a solvent recovery plant activities continued located in Clover, South Carolina. SEPCO went bankrupt included removal of in 1974, and abandoned the Site leaving approximately liquid waste from the site.

In 1978, the Carolawn Company two incinerators on the site.

SCDHEC, a test burn was

however, full scale

time of abandonment of the

the 3-acre fenced area

a diked area for storage of

incinerators, two storage

many as 480 drums containing

additional 660 drums and 11

outside the fenced area to the

notified by SCDHEC that they

Carolawn site.

During the early 1980's,

investigations at the Carolawn

included collecting

well samples for analysis. The

investigations showed the

and other solvents in nearby

also indicated that the Site

levels of metals and organic

elevated levels of

threat for imminent damage to

environment, EPA initiated

December 1, 1981. The cleanup

through February 1982, and

contaminated soils, drums, and

2,500 drums of solvents on site. SEPCO had been storing 1982, the Site was proposed for the drummed solvents in anticipation of incinerating the Priorities List (NPL). The waste. However, neither an incineration permit nor a the NPL in September, storage/disposal permit was issued to SEPCO by the of local residential wells SCDHEC. levels of TCE, the Chester

Municipal Sewer District's water main from Highway 9 was addressed during an EPA removal extended to four of the five residences living near the site. 1990 field investigation by the These four residents were connected to this alternative Division, some uncertainties water supply in 1985. presence or absence of soil

review of all the available Due to the complexity of the Carolawn Site, and in order to Remedial Investigation and simplify the investigation and response activities, EPA needed to be conducted on OU2 divided the Site into two discrete study areas known as risk assessment and a sound Operable Units (Figure 2). Operable Unit One (OU1) consists of source areas located on a 3-acre parcel within the fenced area of the site and the groundwater located as follows:

beneath the entire Site (to include the groundwater beneath OU2). Operable Unit Two (OU2) consists of the land samples from 42 locations located immediately around the fenced area and the land background surface soil sample; located north and west of the fenced area (north and west drum areas). soil samples from 10

one background subsurface On August 29, 1985, a group of Potentially Responsible Parties (PRPs) (the Carolawn Generators Steering Committee) entered into a Partial Consent Decree with the water and 4 sediment samples United States Government to conduct a Remedial that included one background Investigation and Feasibility Study (RI/FS) for OU1. The and one background sediment

Subsequently, in December inclusion on file National Carolawn Site was finalized on 1983. Since continued sampling showed persistently high

Although this area was action and again during the EPA, Environmental Services still existed as to the contamination. Based on EPA's data, it was determined that a Feasibility Study. (RI/FS) in order to develop a baseline remediation plan.

The RI field activities were

Collected surface soil that included one

Collected 10 subsurface locations that included soil sample;

Collected 4 surface from offsite locations surface water sample

purpose of this RI/FS was to fully characterized the nature and extent of the contamination present at the Site and to identify the relevant alternatives for remedial action. Phase reconnaissance of the Carolawn —, I and Phase II of the RI/FS, conducted at the Site between surrounding area in order to identify 1985 and 1989, confumed the presence of volatile organic which are potentially affected compounds (VOCS) in the groundwater exceeding migration from the site; Maximum Contaminant Levels ("MCLs") set by the National Primary Drinking Water Regulations in the Safe screening to identify Drinking Water Act. On September 27, 1989, EPA issued threatened species within the site a ROD for OU1 which selected a groundwater interception performed by contacting and extraction system as the remedy for groundwater and Wildlife Service. The contamination at the site. It was also determined that due was collected, reviewed and to the effectiveness of the removal actions, no source of the investigation. contamination remained within the fenced area of the site. However, the findings documented in the ROD for OU1 electromagnetic investigation to indicated that limited soil data was collected from the west wastes or drums at the site. and north drum areas located outside the fence; therefore, collection of additional samples was necessary to confirm INVESTIGATION the Presence or absence of residual soil contamination in these areas. See the Section titled Update on OU1 on page and extent of contamination 10 of this fact sheet for the current status of OU1. defined the potential risks to

environment posed by the Site. A In response to these concerns, EPA conducted a field four (4) surface water, and four investigation at the Site in 1990. The purpose of the field collected (see Figures 3 and 4). investigation was to provide additional information on the ROD for OU1 selected a presence of contaminants in the subsurface soil at the extraction system as the former storage areas situated outside the fenced area. The contamination at the site. Since a sampling results indicated the presence of VOCs in the soil. selected for the Carolawn

sample;
Conducted a site
site and the
the various habitats
by contaminant

Performed an Ecological
endangered and
area. The screening was
the United States Fish
data from this agency
sununarized as part of

Conducted an
locate any buried

RESULTS OF THE REMEDIAL

The RI investigated the nature
on and near the Site, and
human health and file
total of Fifty-two (52) soil,
(4) sediment samples were
As previously discussed, the
groundwater interception and
remedy for groundwater
groundwater remedy has been

site, groundwater was not evaluated in the RI or the to identify the various habitats Baseline Risk Assessment. All samples collected during the by contaminant migration RI were analyzed for volatile and extractable organic reconnaissance included rough compounds, pesticides, polychlorinated biphenyls (PCBs), habitat zones present and and metals. species within each habitat zone.

of species composition or Human Health various habitats were made

However, a baseline ecological The laboratory results for all samples collected were to determine if there is any evaluated to identify compounds that exceeded threshold the environment from previous concentrations (standards) established by EPA and SCDHEC; or were statistically significant compared to background concenwations. These compounds were risk assessment, the laboratory identified as chemicals of potential concern (COPCs). These collected were evaluated to identify compounds were further evaluated to determine the human threshold concentrations health risks associated with their exposure to people. The and SCDHEC; or were risks for each of these compounds was estimated in the compared to background Baseline Risk Assessment Report. compounds were identified as

potential concern (ECOPCs). These The following is a summary of the chemicals of potential evaluated to determine the concern identified in each media sampled. with their exposure to

for each of these compounds Soil. The results of the surficial soil analyses indicated that Risk Assessment Report. there are several COPCs present in the soil cover. These compounds include: arsenic, barium, beryllium, calcium, the ecological chemicals of chromium, copper, iron, lead, magnesium, manganese, in each media sampled. the sodium and polyehlorinated biphenyls (PCBs). Other used to select ecological

the surrounding area it order which are potentially affected from the site. The delineation of the various identification of dominant No quantitative measurements physical characteristic of the during this investigation. risk assessment was performed present or potential risk to site activities.

Similar to the human health results for all sample compounds that exceeded (standards) established by EPA statistically significant concentrations. These ecological chemicals of compounds were further environmental risks associated ecological receptors. The risk was estimated in the Baseline

The following is a summary of potential concern identified screening criteria that are

concentrations of inorganics and organics were detected in are specific to ecological the soil. However, the concentrations of these contaminants COPCs may often include different were below the typical background concentration ranges for human health assessment. native soils or were below the threshold standards established by EPA. surficial soil analyses indicated that

present in the soil cover. These Surface Water and Sediment. There were no COPCs barium, copper, lead, identified for surface water. In addition, no volatile and PCBs, tetrachloroethene, and extractable organic compounds, pesticides or PCBs were of inorganics and organics detected in any of the Samples. Metals were detected in all However, the concentrations of of the surface water samples. However, the concentrations the typical background of these contaminants were below the typical background native soils or were below the concentration ranges. established by EPA.

The sediment analyses revealed that arsenic is the only of barium, all chemicals chemical of potential concern in sediment. In addition, no eliminated as an ECOPC. volatile organic compounds, pesticides or PCBs were eliminated from sediment during detected in any of the samples. no screening value or

available for compound, Environmental Health to cause a threat to the

normally precipitates out of Ecological Site Reconnaissance. Black & Veatch personnel and therefore is less conducted a site reconnaissance of the Carolawn site and organisms. it is unlikely that

terrestrial organisms will come in direct contact with the ingestion of subsurface soil sediment at the site. Therefore, it should be noted that it is (skin) contact with subsurface soil unlikely that barium in sediment will pose a significant risk

chemicals of potentia concern receptors; therefore, the individual chemicals than the Soil. The results of the there are several ECOPCs compounds include: arsenic, manganese, mercury, zinc, toluene. Other concentrations were detected in the soil. these contaminants were below concentration ranges for threshold standards

Sediment. With the exception detected in sediment were Barium was unable to be the screening process, because background concentration was However, barium is not likely aquatic environment because it solution as an insoluble salt bioavailable to aquatic

Incidental
Dermal

to terrestrial organisms at the site. In addition, barium is not carcinogens and non-carcinogens pose different known to bioaccumulate; therefore, this limits the potential health risks, the EPA calculates two possibility that terrestrial as well as aquatic organisms will numbers when estimating health risks: come into direct contact with these contaminants through the food chain. For these reasons, exposure of terrestrial Quotient is calculated for non-carcinogens to and aquatic organisms to barium in sediment was not whether health problems, other than cancer, further evaluated in this Baseline Risk Assessment. associated with a Superfund site. It is derived

the chemical exposure level at the site by Electromagnetic Investigation. The primary purpose of this level determined to be safe. If the Hazard Electromagnetic Investigation was to locate any buried greater than 1 there may be concern for waste or metal objects at the site. No magnetic anomalies health effects. Hazard quotients are calculated were detected during the investigation. Detection of chemical of potential concern found at the site. magnetic anomalies would indicate the presence of buried overall potential for non-carcinogenic drums. by more than one chemical, all of the

quotients calculated for each chemical are added
SUMMARY OF RISK ASSESSMENT
sum of the hazard quotient is called a

Like the hazard quotient, if the hazard CERCLA directs EPA to protect human health and the greater than 1.0 then the contaminants pose a environment from current and potential future exposure to health risk. hazardous substances at the site. A risk assessment was conducted to evaluate the potential current and future risks is expressed as an incremental probability associated with exposure to the site contaminants. individual developing Cancer over a lifetime as a

exposure to tile potential carcinogen.
Human Risk

below summarize the health risks estimated
All of the chemicals of potential concern and the media future exposure scenarios. (soil and sediment) in which these chemicals were found were evaluated in a Baseline Risk Assessment (BRA). A Baseline Risk Assessment is performed at all Superfund sites to determine whether the site poses a current or potential risk to human health and the environment, in

Because
types of
different

1. A Hazard

assess

might be

by dividing

the chemical
Quotient is
potential
for each

To assess the
effects posed
hazard

together. The
hazard index.
index is
possible

2. Cancer Risk

Of an
result of

Tables 1 and 2
for current and

absence of any clean-up. Both potential carcinogenic and non-carcinogenic risks were estimated, with respect to POTENTIAL CARCINOGENIC RISK RANGE current conditions and possible future conditions.

Potential human exposure routes (for adults and children)
Exposure 9E-09 - 1E-07
evaluated in the BRA included the following:
Pathways

Incidental ingestion of surficial soil
Exposure 9E-09 - 1E-05
Dermal (skin) contact with surficial soil
Pathways

Incidental ingestion of sediment from Fishing Creek
Dermal (skin) contact with sediment in Fishing Creek

Note:
probability
to be

Unacceptable risks are those which have a Future potential exposure routes for adults and children less than IE-06. No action would be necessary associated with site development that were evaluated further protective of human health if the risk included all of the scenarios listed above in addition to the probabilities are between IE.04 and IE-06. following:

cottontail rabbit are common terrestrial upland habitats. Because these two upland habitats as well as the study exposure pathway exists to these

Table 9

they were used as surrogates to represent exposed to contaminated surface soils

POTENTIAL NON-CARCINOGENIC
HAZARD INDEX RANGE

(HQ) method was used to define Current Exposure 2E-02 - 5E-05 the representative terrestrial receptors Pathways pathway. This method involves: 1)

and the easter species inhabiting species are common in area, and a complete receptors via soil, the terrestrial species at the site.

The Hazard Quotient potential risk to the via the soil exposure

of each receptor species to
Future Exposure 6E-01 - 5E-05
contaminated food and/or soil; 2)
Pathways
scientific studies the highest

roduces no observed adverse effects

exposure level which produces

Note: Unacceptable risks are those
effects (LOAEL) in the representative
which have a hazard index above 1.0

Dividing the estimated receptor species

NOAEL and LOAEL. A LOAEL

is indicative that there may be a

effects on the receptor species.

robin as a potential receptor for the soil

LOAEL HQ values ranged from

the NOAEL HQ values ranged from
Carcinogenic risk estimates for current and future
accordance with EPA's guidance for
conditions are either below the lower limit 1E-6 or within
Assessments, remedial goals for the
EPA's acceptable range (1E-6 to 1E-4). No non-
ecological receptors should be bounded by the
carcinogenic hazard indices exceeded EPA's acceptable
lower end and the LOAEL value on
level of 1.0. In summary, EPA has determined that risks to
the risk range is between 3.8E-01 to
human health from contaminants in the soil and sediment
exceed EPA's acceptable level of
are within EPA's acceptable risk range and that remediation
of the soil and sediment would not be required for the
protection of human health. A more detailed discussion of
cottontail rabbit, a potential receptor for
the exposure routes and presentation of the risk estimates
pathway, the LOAEL values ranged from
can be found in the Baseline Risk Assessment located in
the NOAEL values ranged from
the Administrative Record.
accordance with EPA's guidance for

Assessments, remedial goals for the
Environmental Risk
ecological receptors should be bounded by the

Estimating the exposure
ECOPCs by ingestion of
Determining from past
exposure level which g
(NOAEL) and the lowest
observed adverse
species; and, 3)
exposure level by the
based HQ greater than 1
potential for adverse

Using the american
exposure pathway, th(
6.8E-06 to 6.1E-01 and
6.8E-05 to 6.1E+00. In
Ecological Risk
protection of
NOAEL value on the
the upper end. Thus,
6.8E-05 which does not
1.0.

Using the eastern
the soil exposure
9.5E-08 to 6.2E-03 and
9.5E-07 to 6.2E-02. In
Ecological Risk
protection of
NOAEL value on the

lower end and the LOAEL value on

A qualitative risk assessment was conducted to determine risk range is between $6.2E-03$ to if ECOPCs posed an unacceptable risk to the ecological exceed EPA's acceptable level of receptors on and near the site. All ECOPCs and the media of concern (surface soil) were evaluated in the ecological section of the Baseline Risk Assessment. determined that risks to the

for Drum contaminants in the soil are below

At the Carolawn site, the terrestrial habitats present on the range and that remediation of the soil site property include upland habitats. The american robin for the protection of the environment.

PROPOSED FINAL ACTION
does not appear to be

local residents.

After careful evaluation of all the exposure routes, estimated carcinogenic and non-carcinogenic health risks, construction of a series of extraction and ecological impacts, the EPA has concluded that the ground water, a treatment Carolawn OU2 site does not pose an unacceptable risk to contaminants which pose a risk to human health or file environment. Based on the data enviromment, and discharge of treated collected in the RI and the health and environmental risks The extraction wells have estimated in the Baseline Risk Assessment, EPA construction of the treatment recommends that no further action is necessary to provide solicited soon. additional protection to human health or the environment. The Baseline Risk Assessment shows no unacceptable to include comments on the current or future risk for human health from exposure to the water treatment system during soils or the sediment. The Baseline Risk Assessment shows Design, as well as our no unacceptable risk for ecological receptors from exposure contains a more detailed to the soils. water design, can be reviewed at

repositories listed on page 11.

Based on the results of the Remedial Investigation and the Baseline Risk Assessment Report, EPA is recommending no

the upper end. Thus, at $9.5E-07$ which does not 1.0.

In summary, EPA has ecological receptors EPA's acceptable risk would not be required

Owned Treatment Works (POTW)
feasible or acceptable to

This design includes wells to collect contaminated system design to remove human health or the ground water to Fishing Creek. been constructed. Bids for system are expected to be

Individuals should feel free Final Design for the ground this comment period. The Final March 1994 Fact Sheet, which explanation of the ground the site information

further action at this site (OU2). However, should future monitoring of the site (e.g. Five-Year Review) indicate that the site poses an unacceptable risk to the environment, then EPA may initiate clean-up actions under the authority of relations program under CERCLA and in accordance with the National Oil and citizens' concerns and needs for Hazardous substances Pollution Contingency Plan. enable residents and officials of a the decision-making process.

authorizes technical work on a
UPDATE ON OU1
contractors prepare a

based upon discussions
In response to concerns generated by citizens during a leaders and private citizens. public meeting held on January 10, 1995, EPA collected techniques EPA will use to two (2) sediment and one (1) surface water sample located the community during the within the 3-acre fenced area. All samples were analyzed communication efforts often for volatile and extractable organic compounds, pesticides, small informal meetings or polychlorinated biphenyls (PCBs) and metals. releases, correspondence and

available for review at the site
The laboratory results for all samples collected were evaluated to identify compounds that exceeded threshold concentrations (standards) established by EPA and administrative record and an SCDHEC; or were statistically significant compared to reports and other documents background concentrations. In summary all compounds citizens. The administrative record is were within an acceptable range. The results are available information used by EPA to select for your review at the site information repository. under the CERCLA. A

at the Region IV EPA Office in
Currently, EPA and the PRPs are continuing to work information repository is a file that toward implementing the groundwater clean-up for OU1. such as technical reports and Based on comments expressed by local residents and the site. The information officials, EPA is proposing that the Groundwater Treatment reviewed at the library listed System be constructed as outlined in the Final Remedial

OPPORTUNITIES FOR PUBLIC INVOLVEMENT

EPA has developed a community Superfund to respond to information as well as to community to participate in Before EPA carries out or site, EPA staff and/or EPA Community Relations Plan(CRP) in the community with local This plan identifies the communicate effectively with remedial process. These include telephone contacts, formal public meetings, news fact sheets. The CRP is information repository. EPA establishes an information repository where are made available to a file which contains all a response action for the site duplicate file is maintained Atlanta, Georgia. The contains current information reference documents regarding repository documents can be below. For information

<p>regarding the documents</p> <p>Design, dated November 1992. Discharge to a Publically</p> <p>administrative record and information</p>	<p>maintained in the</p>
<p>repository, visit the library listed below or contact file EPA</p> <p>ARE AVAILABLE</p> <p>community relations coordinator for the site.</p>	<p>TECHNICAL ASSISTANCE GRANTS</p>
<p>interpreting the technical findings</p> <p>You are encouraged to visit the information repository and</p> <p>communities may apply for Technical</p> <p>contact EPA and SCDHEC representatives listed in this</p> <p>\$50,000. Congress and EPA</p> <p>document for additional information. EPA would also</p> <p>for the use of this grant.</p> <p>accommodate requests for informal meetings during the</p> <p>a TAG may contact Ms.</p> <p>public comment period, to further explain the findings of</p> <p>9233.</p> <p>tile RI/FS and the Proposed Plan. Individuals interested in</p> <p>arranging briefings should contact EPA's Community</p> <p>Relations Coordinator for the Site.</p>	<p>To assist communities in</p> <p>at Superfund sites,</p> <p>Assistance Grants of up to</p> <p>have established requirements</p> <p>Citizens who are interested in</p> <p>Cynthia Peurifoy at 1-800-435-</p>

<p>Administrative Record and Information Repository</p>		
<p>Lancaster County Library</p> <p>County Library</p> <p>313 South White Street</p> <p>Center Street</p> <p>Lancaster, SC 29720</p> <p>Chester, SC 29706</p> <p>(803) 285-1502</p> <p>377-8145</p>	<p>Chester</p> <p>100</p> <p>(803)</p>	

<p>HOURS</p>		
<p>HOURS</p>	<p>Monday - Thursday</p> <p>- Thursday</p> <p>9:00 am - 8:00 pm</p> <p>- 7:00 pm</p> <p>Friday</p> <p>- Saturday</p> <p>9:00 am - 5:30 pm</p> <p>- 5:00 pm</p> <p>Saturday</p>	<p>Monday</p> <p>9:00 am</p> <p>Friday</p> <p>9:00 am</p>

Sunday

9:00 am - 5:00 pm

Closed

Sunday

Closed

FOR FURTHER INFORMATION

Remedial Project Managers

Operable Unit One - Alfred Cherry
Operable Unit Two - Yvonne Jones
U.S. Environmental Protection Agency
345 Courtland Street, NE
Atlanta, Georgia 30365
(404) 347-7791 or (800) 435-9233

Community Relations Coordinator

Cynthia Peurifoy
U.S. Environmental Protection Agency
345 Courtland Street, NE
Atlanta, Georgia 30365
(404) 347-7791 or (800) 435-9233

Regional TAG Coordinator

Rosemary Patton
U.S. Environmental Protection Agency
345 Courtland Street, NE
Atlanta, Georgia 30365
(404) 347-3931 Ext 6107

South Carolina Project Manager

Richard Haynes
District Engineer
South Carolina Department of Health & Environmental Control
2600 Bull Street
Columbia, South Carolina 29201
(803) 896-4070

GLOSSARY

Administrative Record - A file which is maintained and contains all information used by the EPA to make its decision on the selection of a response action under CERCLA. This file is required to be available for public review and a copy is to be established at or near the site, usually at the information repository. A duplicate file is

maintained in a central location such as a regional EPA and/or state office.

Baseline Risk Assessment (BRA) - An assessment which provides an evaluation of the potential risk to human health and the environment in the absence of remedial action.

Carcinogens - Substances that cause or are suspected to cause cancer.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) - A federal law passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act (SARA). The Acts create a trust fund, known as Superfund, from taxes on chemical and petroleum companies, to investigate and clean up abandoned or uncontrolled hazardous waste sites.

Information Repository - Materials on Superfund and a specific site located conveniently for local residents.

National Priorities List (NPL) - EPA's list of uncontrolled or abandoned hazardous wastes sites eligible for long-term clean up under the Superfund Remedial Program.

National Oil and Hazardous Substances Contingency Plan (NCP) - The Federal regulation that guides the Superfund program.

Noncarcinogens - Substances that may cause other adverse health effects besides cancer

Parts Per Million (ppm) - Units commonly used to express low concentrations of contaminants. For example, 1 ounce of Chloroform in 1 million ounces of water is 1 ppm. If one drop of Chloroforms are mixed in a competition sized swimming pool, the water will contain about 1 ppm Chloroform.

Potentially Responsible Parties (PRP's) - This may be an individual, a company or a group of companies who may have contributed to the hazardous conditions at a site. These parties may be held liable for costs of the remedial activities by the EPA through CERCLA Laws.

Public Comment Period - Time provided for the public to review and comment on a proposed EPA action or rulemaking after it is published as a Proposed Plan.

Record of Decision (ROD) - A public document that explains which cleanup alternative will be used at a National Priorities List site and the reasons for choosing the cleanup alternative over other possibilities.

Remedial Investigation/Feasibility Study (RI/FS) - Two distinct but related studies, normally conducted together, intended to determine the nature and extent of contamination at a site and to evaluate appropriate, site-

specific remedies.

Reasonable Maximum Exposure (RME) - A term used in the Baseline Risk Assessment. The RME is the highest exposure to contaminants that is reasonably expected to occur at a site as is based on the professional judgement of the risk-assessor.

Responsiveness Summary - A summary of oral and/or written public comments received by EPA during a comment period on key EPA documents and EPA's responses to those comments. The responsiveness summary is especially valuable during the Record of Decision phase at a site on the National Priorities List when it highlights community concerns for EPA decision-makers.

Safe Drinking Water Act (SDWA) - Federal law passed in 1974 to ensure water supply systems serving the public would meet minimum standards for the protection of public health. The law was designed to achieve reform safety and quality of drinking water in the United States by identifying contaminants and establishing maximum acceptable levels.

Superfund Amendments and Reauthorization Act (SARA) - Modifications to CERCLA enacted on October 17, 1986.

Volatile Organic Compounds (VOCs) - Organic compounds which easily change from liquid to a gas when exposed to the atmosphere.

CAROLAWN (OU2) SUPERFUND SITE MAILING LIST COUPON

If you have had a change of address and would like to continue to receive site related information or would like for EPA to add your name and address to the mailing list for the Carolawn (OU2) Superfund Site, please complete this self-addressed form. If you have any questions regarding this mailing list, please call Cynthia Peurifoy at 1-800-435-9233.

NAME:

ADDRESS:

TELEPHONE: () -

USE THIS SPACE TO WRITE YOUR COMMENTS

Your input on the Proposed Plan for the Carolawn (0112) Superfund Site is important in helping EPA select a final remedy for the Site. You may use the space below to write your comments, then

fold
and mail. A response to your comment will be included in the Responsiveness Summary,

PROPOSED PLAN PUBLIC COMMENT SHEET

Fold on dashed lines, staple, stamp and mail

Name

Address

City State Zip

Cynthia Peurifoy, Community Relations Coordinator
North Superfund Remedial Branch/Waste Division
U. S. EPA, Region 4
345 Courtland Street, NE
Atlanta, GA 30365

	United States	North Superfund Remedial Branch
	Environmental Protection	345 Courtland Street, NE
	Agency	Atlanta, Georgia 30365
	Region IV	

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Penalty for Private Use
\$300

Cynthia Peurifoy
Community Relations Coordinator
(Carolawn NPL SITE)

Attachment B

Public Notices of Public Comment Period and Extension
of Public Comment Period

Attachment C

Written Public Comments Received
During the Public Comment Period

To: Cynthia Peurifoy, Community Relations Coordinator
North Superfund Remedial Branch/Waste Division

From: Susan K. Helms

Date: August 1, 1995

Topic: Toxic Cleanup

I would like to state my ideas concerning the proposed cleanup of the toxic mess in my community.

1. The ground water within a mile radius of the site should be treated with a permanent waste treatment plant which should be built on the site. The treated water should be pumped to the nearest natural creek (Fishing Creek). This plant should be built to allow community to use for future growth after the contaminated water has been treated. The estimated time of completion should be within an eight year period.
2. The soil and waste including drums have not been completely cleaned up as reported which was proven at the last public hearing with photos and reports of private citizens. The entire site should be examined again especially for underground drums and further cleanup of the area completed.

Thank you for your support and investigation of the matter. I am concerned for my sons and future grandchildren. I know you would be also if you lived in my community.

South Carolina

DHEC

Department of Health and Environmental Control

Richard E. Jabbour, DDS

2600 Bull Street, Columbia, SC 29201

Chairman

Cyndi C. Mosteller

Brian K. Smith

Rodney L. Grandy

Environment

Rodney L (lnmdy

Commissioner: Douglas E. Bryant

Board: John H. Burriss, Chairman

William M. Hull, Jr., MD, Vice

Roger Leaks, Jr., Secretary

Promoting Health, Protecting the

September 19, 1995

John H. Hankinson, Jr.

Regional Administrator

U.S. EPA, Region IV

345 Courtland Street

Atlanta, GA 30365

RE: Carolawn OU-II - Record of Decision

Dear Mr. Hankinson:

The Department has reviewed and concurs with the revised Record of Decision (ROD) dated August 14, 1995 for the Carolawn Operable Unit II (OU-II) site. In concurring with this ROD, the South Carolina Department of Health and Environment Control (SCDHEC) does not waive any right or authority it may have under federal or state law. SCDHEC reserves any right or authority it may have to require corrective action in accordance with the South Carolina Pollution Control Act. These rights include, but are not limited to, the right to insure that all necessary permits are obtained, all clean-up goals and criteria are met, and to take separate action in the event clean-up goals and criteria are not met. Nothing in the concurrence shall preclude SCDHEC from exercising any administrative, legal and equitable remedies available to require additional response actions in the event that: (1)(a) previously unknown or undetected conditions arise at the site, or (b) SCDHEC receives additional information not previously available concerning the premise upon which SCDHEC relied in concurring with the selected alternative; and (2) the implementation of the remedial alternative selected in the ROD is no longer protective of public health and the environment.

The State concurs with the selected alternative of "No-Action". The State concurrence on this alternative is based on the Baseline Human Health Risk Assessment, which determined that the Carolawn OU-II site

does not pose any acceptable current or future risks to human health. This concurrence is also based on the Department's above mentioned reservation of rights.

Sincerely,

R. Lewis Shaw, P.E.
Deputy Commissioner
Environmental Quality Control

cc: Hartsill Truesdale
Keith Lindler
Al Williams, Catawba EQC
Gary Stewart
Richard Haynes

--

Attachment D

Official Transcript of the Proposed Plan Public Meeting

UNITED STATES ENVIRONMENTAL AGENCY

REGION IV

PROPOSED PLAN PUBLIC MEETING

FOR THE

CAROLAWN SUPERFUND SITE

TRANSCRIPT OF PROCEED

AUGUST 10, 1995

RICHBURG, SOUTH CAROLINA

REPORTER:

WACHSMUTH, CVR

P.O. Box 2711 CRS

ROCK HILL, S.C. 29730

(803) 328-9640

REPORTER: SUSAN WACHSMUTH, CVR

Dallas Reporting
VERBATIM COURT REPORTING
P.O. Box 2711 CRS
ROCK HILL, S. C. 29730
(803) 328-9640

P R O C E E D I N G S

United States Environmental Protection Agency

Region IV

Proposed Plan Public Meeting

for the

CAROLAWN SUPERFUND SITE

August 10, 1995 - 7:00 P.M

Lewisville Elementary School
Richburg, South Carolina

* * * * *

MS. PEURIFOY - Good evening, everybody. We're

going to go ahead and get started. I am Cynthia
Peurifoy, and I'm the Community Relations Coordinator
for EPA, Region IV, with the South Carolina Section of
the North Superfund Remedial Branch. I'd like to
introduce some people that are here with me tonight:
Mr. Al Cherry, who is the Project Manager for Operable
Unit One of the Carolawn site; Ms. Yvonne Jones, who is
a Project Manager for Operable Unit Two of the Carolawn
site; Miss Marlene Tucker, who is our attorney for the
site; and Mr. Jan Rogers, who is the Chief of our
Section. We also have some people here with us from
the South Carolina Department of Health and
Environmental Control, Mr. Richard Haynes and Mr.
Enayet Ullah.

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1 I'd like to go over with you a little bit our
2 purpose for tonight's meeting. We're going to
3 summarize the remedial investigation and site
4 background, and we're going to talk about the study
5 findings. We're not going to spend a lot of time on
6 the site background tonight because we know that you're
7 really here to talk to us. We're going to summarize
8 the baseline risk assessment and we're going to talk
9 about EPA's preferred cleanup alternative, and we're
10 going to give you the rationale for what we're
11 proposing. We're then going to get into the summary of
12 the groundwater design, and then we're going to ask for
13 your comments, questions and concerns.

~

14 As you will notice, we have a court reporter here
15 tonight; and we need to make sure that she's able to
16 get down everything that is said, so we're going ask
17 you to come to the microphone, identify yourself, and
18 say whatever you have to say. We're going to also ask
19 you not to interrupt people when they're talking,
20 because she will go crazy, she's already told me. So,
21 let's be very respectful of others and give her a
22 chance to do what she's here to do.

23 I wanted to talk a little bit about community
24 relations issues. EPA gives Technical Assistance
25 Grants to communities where there are superfund sites.

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4
1 This is a grant of fifty thousand dollars to community
2 groups to hire technical advisors. You have to do a 20
3 percent match, which can be done through in-kind
4 services, cash - - - whatever form you like - - -
5 volunteer services. You must prepare a plan for how
6 you want to use the money, and you can also hire a
7 person to handle the grant for you, an administrator.
8 You cannot use the TAG grant to develop new information
9 or to conduct sampling or underwrite legal actions.
10 The group must be non-profit and must be incorporated.

11 We have two information repositories set
12 up where you can find administrative records; they are
13 the Lancaster County Library and the Chester County
14 Library. You can also find the groundwater design at
15 the Lancaster library. You have an 800 number, you can

16 call us at any time. It's 1-800-435-9233. Any time
17 you want an update on the site, any time you have any
18 questions or concerns, give us a call.
19 I'm now going to turn things over to Ms. Yvonne
20 Jones.
21 MS. JONES - Basically, as Cynthia stated earlier,
22 due to the fact the majority of, I guess the citizens
23 here - - - please correct me if I'm wrong - - - for the
for the
24 most part pretty much have an understanding of what
25 took place in the background, as far as the Carolawn

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1 history - -- site history.
2 MR. CHERRY - Yvonne, they say they can't hear you.
3 Lower your mike a little bit.
4 MS. PEURIFOY - While we're doing this, can
5 everybody see the screen okay?
6 MS. JONES - We could also dim the lights if that
7 would be more appropriate. Basically, to summarize, I
8 think, a little bit of the history of the Carolawn
9 site, there was a company by the name of SEPCO Company
10 that, basically, had what we would call a storage and
11 disposal facility that operated on the whole entire
12 site, which we are estimating to be approximately five
13 acres - - - five to seven acres, I guess which
14 would be named Carolawn.
15 Around mid-1970, SEPCO Company basically went
16 bankrupt, and another company by the name of the
17 Carolawn Company basically came in and also operated at
18 the site. Unlike the SEPCO Company, they did not
19 operate on the whole entire site - - - at least to our
20 knowledge they did not operate on the whole entire site
21 but basically they pushed out the drums that were
22 on the inside of the fence, known as SEPCO drums; and,
23 of course, they started their operations within the
24 three acre portion of the fence. I don't know if
25 everyone can see that. Sometime in 1979, the Carolawn

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1 Company went bankrupt. Not only that, there was some
2 contamination, basically VOC at this particular
3 time is trichloroethane - - - that was found in a
4 citizen's well. That led to several investigations;
5 mainly SCDHEC, or South Carolina Department of Health
6 and Environmental Control, did a groundwater study. In
7 addition to that, that led to a removal conducted by
8 EPA in 1981.

9 Basically, as you can see, the areas where the
10 removal took place were, for the most part, within the
11 fenced in area. You can see that to the west
12 portion of the site, which is what we would have
13 considered the West Drum Area and, of course, the North
14 Drum Area.

15 Basically, this is a photograph taken in 1984. As
16 you can see, there are still a few horizontal tanks,
17 maybe one vertical tank that is still left on the site.
18 I do not have an aerial photograph that basically shows
19 the site as of this date. However, I can tell you that
20 there is at least one horizontal tank in other
21 words, this is a tank that's fairly large and literally
22 horizontal and, of course, we do have some
23 storage, I guess, drums out there; not really used, I
24 guess, for what they were using them for, but we use
25 them for our remedial investigation activities.

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1 Basically, the focus of this RI was to study the
2 area on the outside of the fence, and I guess I need to
3 talk a little bit about OU1 and OU2. Based on what
4 I've heard, there seems to be a little bit of concern
5 as to what was considered to be OU2 and what's
6 considered to be OU1. Basically, what we considered
7 OU1 to be was the area within the fence. That is the
8 area where we felt - - - or that we know that Carolawn
9 operated on. In addition to that, that also included
10 the groundwater, not only below the three acre fenced
11 in area, but also the groundwater beneath the entire
12 site.

13 As far as OU2, which is our focus of this
14 investigation that we have currently completed
15 basically, we looked at the West Drum area. I don't
16 know, can everyone see that? We also looked at the
17 North Drum area and, basically, the perimeter around
18 the site. Basically, the area of focus was
19 approximately two acres of land surrounding the chain

20 link fence. One of the reasons we did this was - - -
21 doing Operating Unit One, basically, you know, we
22 investigated the area within the fence. However, we
23 did not look at the areas right around the perimeter of
24 the fence. So, it included that. There was some
25 concern about whether or not the sediment or the

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1 surface water had been properly addressed, so we also
2 looked at the sediment and surface water.
3 Basically, we collected actually 52 soil samples.
4 42 of those samples were surface soil samples. In
5 other words, those samples were collected from zero to
6 six inches. We collected 10 subsurface oil samples,
7 four surface water samples, four sediment samples. In
8 addition to that, we also conducted what we would call
9 a site reconnaissance to basically determine the type
10 of ecological system that we have out there. We also
11 conducted what we call electromagnetic investigation
12 And, in summary, what that is, it's really - - - it's
13 the way or it's a procedure that we use to determine
14 whether or not we have any buried metal objects below
15 the surface.
16 And, as you can see here - - - I'm little out of
17 focus - - -but, basically, we've divided the site into
18 what we considered or called grids. Basically, in the
19 areas where we thought there was an indication of
20 contamination, we sampled in a 50 by 50 area,
21 basically, taking composite samples. In the areas
22 where based on the aerial photographs did not really
23 look like they had any - - - I guess, stressed
24 vegetation or indication that there was contamination
25 out there - - - we looked at on a 100 by 100 grid

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1 sample. And, basically, this is just a map or a
2 figure that shows where we collected the sediment or
3 surface water samples. Basically, on all samples taken
4 during the focus RI, we ran what we call full scan.
5 Basically, what that means is we scan for PCBs,

6 pesticides, metals, and, of course, all organics and
7 extractable inorganic. EPA and of course, I
8 guess you could say EPA to begin with has what we
9 call a set of screening levels that we consider to be
10 protective of human health and the environment. When
11 we get ready to do our Risk Assessment, basically what
12 we do is we say, do we have any contaminants that are
13 above those screening levels? In addition to that, we
--
14 also take what we call a background sample, where we
15 say, do we have any contaminants that are two times, I
16 guess, whatever our background levels are? If we do
17 have contaminants, we basically sum them up on a list
18 of what we call chemicals of potential concern. Now, I
19 just want to say that does not mean that there's a
20 reason to be concerned. It basically means that, hey,
21 you have some contaminants that are at elevated levels.
22 We don't really know how elevated, we don't even know
23 if there's really a risk that's, you know, been
24 generated. But we're going to look at them, in the
25 process of using the Risk Assessment, to determine if

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10

1 we do have an unacceptable risk. As you can see, there
2 were several inorganics, rather metals, on the surface
3 soil, subsurface soil, and, of course, we had arsenic
4 in the sediment.

5 Basically, in this particular Risk Assessment, we
6 also looked at the impact or whether or not there was
7 an impact on the ecological receptors out at the site.
8 Again, we also did a list of chemicals of potential
9 concern. I would like to say that, as you can see,
10 this list is not exactly the same as what you would see
11 for human health. The reasons are - - - or one of the
12 reasons is because, you know, we are humans and, of
13 course, we're likely to be susceptible or either more
14 or less to certain chemicals than, let's say, a rabbit
15 or a robin. So, that's why you'll see different
16 contaminants of potential concern than what you might
17 see for human health.

18 Basically, for human health, We looked at several
19 different scenarios. We wanted to see, you know, what
20 would the risk be if someone accidentally - - - I
21 shouldn't say accidentally, but actually ingested

22 surficial soil. What would happen if someone actually
23 came in contact with surficial soil that was
24 contaminated by the contaminants that I previously
25 mentioned. And, as you can see, we looked at what

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1 would happen to someone if they ingested sediment in
2 Fishing Creek or came in contact with the sediment in
3 Fishing Creek. That was what we looked at on the
4 potential exposure routes for adults and children. The
5 reason why I say potential at this particular case is,
6 you know, there's no one living on the site right now.
7 However, in the future there could be someone living on
8 the site. So, again, we also have to look at what the
9 chances are of someone ingesting the surficial soil,
10 dermal contact with soil sediment in Fishing Creek, and
11 so on.

12 I'm not going to really go into depth on that; however,
13 at the end of our presentations if you would like to

~
14 ask questions, please feel free to do so.

15 Basically, as far as from the environmental
16 standpoint, we basically looked at the ingestion of
17 either the American robin or, as you can see, the
18 eastern cottontail rabbit for surficial soil. Can
19 everyone see that? It's kind of hard to see.
20 Basically, I guess, it's the same as what was in the
21 fact sheet, in case you might want to turn there. But,
22 in summary, on the current future exposure scenario, in
23 summary we had maybe, I think it was, nine out of a
24 trillion. The range went nine out of a trillion to one
25 out of one hundred thousand, as far as one being that

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1 person that could get cancer if they were exposed to
2 contaminants at the site.

3 And I guess at this particular point I'd like to
4 explain something. EPA has what we call an acceptable
5 risk range. Basically, that is that one person

6 in addition to your additional population getting
7 cancer from the normal area, so to speak could
8 get cancer out of ten thousand. As you can see, we
9 didn't have anything close to that. We had maybe one
10 person, I think - - - worst-case scenario we had one
11 person out of a million getting, you know, possibly
12 getting cancer. Which, of course, we take action if
13 it's one out of ten thousand. As far as looking at
14 what we call non-carcinogenic risks or, rather, risks
15 that are not cancer causing but are risks, basically
16 EPA has a boundary - - - and that boundary being
17 one - - - at which we would look at taking action. In
18 summary, our worst-case scenario was 0.6. So, again,
19 that's also well below what we would consider
20 unacceptable.
21 Basically, we did the same thing for the American
22 robin and, of course, the cottontail rabbits. It's
23 done a little bit differently because, unlike
24 humans - - - we're basically going out to a spot so
25 many times a day, and that's where they're getting

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13
1 their ingestion from. But, in summary, basically those
2 values also fell within EPA's acceptable range.
3 And, based on the results of the Remedial
4 Investigation, and also Baseline Risk Assessment
5 Report, EPA is recommending no further action at this
6 site, for Operable Unit 2, mainly just because we did
7 not have any unacceptable risk as far as human health
8 or environmental health. However, should future
9 monitoring of the site indicate that the site poses an
10 unacceptable risk to the environment, then EPA - - -
11 and I should say EPA in conjunction with the State, of
12 South Carolina - - - may initiate clean-up actions.
13 MR. CHERRY - Hello, I'm Al Cherry, and I'm the
14 Remedial Project Manager for Operable Unit 1. Operable
15 Unit 1 consists of a groundwater clean-up, within the
16 fence, of the site itself - - - in the site itself,
17 right inside the fence. So, for the last couple of
18 years we have been working to complete a design with
19 our consultant, which is Conestoga-Rovers. I think
20 they finally put a good design together, and we hope
21 that this will do the required job.
22 The Carolawn Groundwater Remediation System
23 consists of two treatment processes. One of them,
24 basically, is an Air Stripping/Clarification Process,
25 and the other process is an activated carbon with a bag

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14

1 filter process. The stripping process will be utilized
2 as a primary treatment system, and the activated
3 carbon, the bag filter, will be used as the secondary
4 system. The stripping process is basically designed
5 to handle up to 20 million gallons, and it is an Air
6 Stripping Unit which is basically designed to achieve
7 removal of the particulants of concern. The
8 groundwater system will receive the water from five
9 extraction wells, and these five extraction wells are
10 120 to 150 feet deep and will go down to what we call
11 bedrock.

12 Now, there are plans for another addition of five
13 wells, which will extend the capture plume to capture
14 all of the contaminants if it's necessary. These wells
15 are basically designed to produce a flow of one to two
16 million gallons, and we have five of the wells. The
17 treatment system, as I said before, is designed to
18 handle a flow of 10 to 20 million gallons. Each
19 extraction well is four inches in diameter. It has a
20 centrifugal, submersible pump, and it also has a check
21 valve. There's also on each well what they call
22 pressure transducers, and these pressure transducers
23 are installed so they can be incorporated into the
24 automatic system itself. What these pressure
25 transducers will do is control the level of water in

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1 each one of the wells, and it will tell the pumps when
2 to operate and when not to operate, when to turn on and
3 when not to turn on.

4 So, now we have the wells. And after the wells we
5 have a tank which is called the equalization tank.
6 Basically, the equalization tank is designed to hold a
7 reservoir from the five pumps, from the five extraction
8 wells. This particular tank will hold up to 475
9 gallons of water that is extracted from these wells,
10 and basically what this does is it gives us a retention

11 time. In the tank itself we will have some solids that
12 are being settled out while the water is sitting in the
13 tank, and we have a reservoir so once the controls from
14 the plant itself-decide that the air stripper needs a
15 certain amount of water, then these pumps will kick on
16 and pump water over into the air stripper. This thing
17 is basically designed that they would get a retention
18 of about 23 minutes, that the water coming from the
19 wells would sit and will just set in this tank for 20
20 full minutes. This will allow some settling of solids
21 that will fall out of this water that initially comes
22 from the well.

23 The next unit, which is the air stripper, it is
24 designed to handle 20 gallons per minute. Now, we have
25 control valves, and they are located downstream from

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16

1 the equalization tank. What they will do is, when told
2 by the control system, they will pump, say, 20 gallons
3 per minute of water to the air strippers Then the way
4 that the air stripper is designed, you actually have
5 water coming in the top and you have air bubbles that
6 are being blown up from a blower from the bottom of
7 this tank, and the contaminated material will, being
8 volatiles, will adhere to the water coming down in the
9 air going up, and you'll get volitization, and your
10 volatiles coming up the top of the stripper.

11 Now, our consultant will apply for an air permit,
12 if possible, but according to designing some of the
13 calculations, they don't think that we're going to have
14 enough contaminants coming off the top, volatiles
15 coming off the top of this air stripper, to require
16 that the stripper be permitted.

17 Okay, from that you will get removal of VOCs, as I
18 said before, by the bubbles, and the contaminants
19 attaching to the bubbles and going out the top of the
20 unit itself. And, according to some of the design
21 information that was conducted during the Feasibililty
22 Study, the Remedial Investigation, from
23 manufacturer's rep we found out that the air stripper
24 will remove 90 percent of the TOC and 45 percent of the
25 DCE and 95 percent of the 1,2,DCE. The air stripper

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1 has a removal efficiency of 99.6 percent for TCE; 97.5
2 percent for 1,2,DCE; and 99 percent for 1,1,DCE.
3 These rates, again, are based on the required effluent
4 criteria and expected performance of the equipment
5 itself.

6 There are three water probes located in the unit,
7 and basically the water probes will turn the pumps on,
8 turn the pumps off, and give signals to the rest of the
9 system as to the status of the different units. So,
10 the air stripper would discharge the treated material
11 to the clarifier. Now, the second system consists of
12 the bag filter and activated carbon. Now, this could
13 be used two different times. It would be used when
14 you're having some type of maintenance being conducted
15 on an air stripper or when you need to achieve
16 additional removal through the use of activated carbon.
17 Now, the streams are set up so that from the
18 equalization tank the flow goes into the air stripper,
19 you have solids coming off the equalization tank, and
20 you also have the volatile gases going off through the
21 stack of the air stripper itself. Okay, that material
22 from the treated water from the air stripper will then
23 go into a clarifier, and the water from the clarifier
24 can go to the discharge channel and the solids can go
25 to the dry bed, to the sludge drying bed. Or, from

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1 that it can go to the bag filter. The bag filter, what
2 it does basically, it filters solids and keeps from
3 overloading the activated carbon. And so you
4 actually - - - the bag filter has a dispcnable type
5 filter that you can take out if you need to take it
6 out. You can take it out and you clean it when you get
7 pressure across the filter, or you can run that
8 particular treated material into the activated carbon.

9 Now, the activated carbon has high-efficiency
10 removal, just like the air stripper itself. Very, very
11 seldom will you need to run both of these at the same
12 time, unless you have a failure in one of the systems.

13 Okay, we have an outfall, and the outfall to
14 Fishing Creek is 1,300 feet. There are several
15 manholes in that particular outfall, where we can take
16 samples and we will know what's going on inside. So,
17 back to the plan itself. We have the watering beds.
18 The sludge from the watering system, it can be disposed
19 into a hazardous-type landfill. We have all these

20 different controls on the system itself which will tell
21 us - - - actually it would take a system, send it back
22 to an operator, and we would have pre-set phone numbers
23 that if you call it would call the phone number. In
24 case of a fire alarm, it would call the phone number.
25 In case of a failure in the system, it would call. In

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1 case you have some type of intrusion, someone
2 interfering with the system.

3 Here, again, this system is also developed so we
4 can have additional extraction wells. So, we have a
5 capture plume now, we have a plume now where it looks
6 as though five wells will capture the contamination
7 that is in the groundwater underneath the site. But,
8 there are several things that can happen. If it's not
9 capturing it, we can build additional wells. We can
10 install additional wells to extend the plume. If it's
11 moving too slowly, additional wells may speed up the
12 capture, and we can look at it that way. So, we think
13 that this system will do the required job, and will do
14 the job that we're looking for.

15 In future design we actually have on this
16 particular drawing and diagram we have plans if
17 required where we could put in another activated carbon
18 unit along with additional wells. All through this
19 system itself we have what we call sample reports. We
20 can check the efficiency of the unit itself, like we
21 have sample reports after the equalization tank where
22 we can go in and take a sample. And we also have
23 sample reports after the air stripper. Now there
24 is - - - which I guess I would probably have to look
25 into it. There are some things that this automatic

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1 system can monitor, like pH and maybe inorganics,
2 and it will basically tell us if the stream coming into
3 this treatment system itself is changing. But that's
4 basically the advantage of an equalization tank, so if
5 you've got different wells pumping amounts of different
6 contaminants, once it gets into the equalization tank
7 you will have more of an even flow of - - - even fill,

8 even feed going into the different units itself.

9 Now, there have been some questions about whether
10 this plant can handle multiuse uses. I don't know, but
11 our consultants seem to feel that if the money was
12 available and people were interested they maybe could do
13 some additional things to have this. But from what I
14 understand, I don't know if this type system would be
15 able to take municipal sewage or not. I don't think it
16 will, but our consultants are saying it could be
17 possible, but I don't know what the expense will be.

18 Here, again, we're talking about removal of 90
19 percent. It would more than reach the criteria - - -
20 our criteria for discharge - - - that we should have
21 less than 26 micrograms per milliliter of
22 trichloroethylene, less than 25 micrograms per liter of
23 dichlorethene, and less than 30 micrograms per liter of
24 total solids. With the filters, with the clarifiers
25 that's located behind the equalization tank, and with

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1 the bag filter and the activated carbon itself, I don't
2 see how this system could not be able to meet this type
3 of discharge requirements from any of the equipment.

4 So, that's basically about it. I'll try to
5 summarize this. Again, what we have here, like I said
6 before, we've got proposed now, the system will consist
7 of five extraction wells, and these five extraction
8 wells will handle - - - each well will handle from one
9 to two gallons per minute. We have, then, from that it
10 would be going to an equalization tank, And the
11 equalization tank will hold 475 gallons. From the
12 equalization tank we go to the tray stripper, and the
13 stripper will, by streams of water going up and by
14 streams of water coming down and pumped air going up,
15 the gases will attach to the water bubbles and go out
16 through the stack of the stripper. Then, from that
17 stripper we go to a transfer. We get solids removed
18 from the equalization tank, and they will come down and
19 go to a sand drying filter as they develop in the
20 equalization tank. And then from that, you know, air
21 stripper, and from the air stripper we have a
22 clarifier. There will be retention and settling in the
23 clarifier. The solids from the clarifier can go to the
24 drying bed. Then from the clarifier we will run this
25 material through a bag filter. It would filter again,

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1 and basically that material would also go down to the
2 dewatering bed. And then from that when you wanted to
3 get additional removal you could run this effluent
4 through an activated carbon filter and from there you
5 could go to your discharge channel and go out into the
6 stream and those solids would also you would take the
7 carbon out and send it to a landfill. So, you've got
8 systems that will guarantee a high removal. So, I'm
9 pretty sure this is going to be a good system. I have
10 drawings in the back if anybody is interested in
11 looking at them. They seem to be real complicated;
12 they're real busy, but they have all of the valves and
13 controls and the control units that operate the plant
14 itself.

15 MS. PEURIFOY - Thank you, Al. We have a comment
16 period going now. I missed one of my slides, but it
17 ends August 24th. But it can be extended for an
18 additional 30 days should you make a timely request. I
19 want to do one more thing and we're going to start
20 taking your questions and comments. I want to extend a
21 hearty thanks to two wonderful people, the McMinns
22 who have helped me so much in pulling this together and
23 changing schools and everything. I really appreciate
24 it, guys. Thanks a lot. Public comments, questions?

25 MS. LISEBY - My name is Donna Lisenby. For those

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1 of you who don't know me, I have spent some time with
2 the EPA people. I've been asking a lot of questions.
3 I've spent probably over, gosh, a hundred hours
4 studying this particular site. You know, four hours
5 today with the EPA officials answered my questions, so
6 I'm not going to need to ask them any questions
7 tonight. I'm just going to read my comments to the EPA
8 for the record, and I'm just going to sit down.

9 Comments to the EPA: In your fact sheet in the
10 history section EPA stated that there were a record of
11 2900 drums dumped on the site. You also stated that
12 1140 drums were removed. This leaves the total of 1760
13 drums unaccounted for. You stated that only 7.5 out of

14 a total of 82 acres was electromagnetically scanned for
15 buried drums. EPA's aerial photos are dated in 1979,
16 from which EPA and SCDHEC state there appear to be no
17 off-site dumping, however dumping occurred on the
18 property from 1970 to 1979. There are no aerial photos
19 for 1970, 1971, 1972, all the way to 1978. A dump site
20 could have been considerably overgrown by the time an
21 aerial photo was flown nine years later. A known
22 method of disposal by the operators was to puncture
23 barrels, release the contents onto the ground, and
24 stockpile empty drums. The only way to determine if
25 this occurred on the other 60 acres that remains

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1 untested is if all groundwater for the entire site has
2 been tested. However, only approximately 10 acres have
3 been tested - - - groundwater has been tested. There
4 continues to be physical remains on the property:
5 parts of half-buried and rusting and corroded drums;
6 green, red, brown and gray unidentified solvents.
7 PCBs, solvents, and metals - - - heavy metals
8 were all known site contaminants. These are
9 heavyweight contaminants. The operators were clearly
10 sloppy and indiscriminate in where and how they dumped.
11 Based on these facts, my comments to the EPA are as
12 follows: I do not feel a sufficient investigation of
13 the entire property has occurred. I think there's
14 clear evidence, facts, that could indicate the
15 possibility of hidden burial or dump sites somewhere on
16 the property. I feel very reassured by the redundant
17 and overdesign of the groundwater treatment system.
18 However, I feel strongly that the possibility exists
19 that further soil, subsoil and other, as yet
20 undetected, groundwater plumes could be present
21 somewhere on the remaining untested 60 acres.
22 Therefore, I would like to ask for further testing of
23 the entire site. While this could be goLng on, I would
24 also certainly like to see the groundwater get dumped
25 and treated with the treatment system that you have

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1 approved. I'd like to see that started as soon as
2 possible, before the contaminant plume moves into
3 Fishing Creek. As a matter of fact, tomorrow would not
4 have been fast enough for me for groundwater treatment.
5 My third and final comment is that I'd like to commend
6 some of the community members here tonight who would
7 like to see a municipal treatment capability added to
8 the system. I think that's very forward thinking and
9 positive. I support this idea, if the PRP's stated
10 criteria can be met. However, I feel the groundwater
11 needs to be treated as soon as possible. Thank you.

12 MS. HELMS - My name is Susan Helms, H-e-l-m-s, and
13 I am from Richburg, but I teach in Great Falls. I want
14 to thank you, the EPA, and the PRP for allowing the
15 community to give input to your proposal. I've written
16 you, and now I would like to state my recommendations
17 publicly concerning the proposed clean-up of the toxic
18 mess in our community. I feel the groundwater has to
19 be treated on the site immediately, as Donna said, and
20 believe the community deserves a permanent treatment
21 facility. This facility should be built to allow the
22 community to use for future growth after the
23 contaminated water has been treated. The estimated
24 time of completion of the decontaminated water should
25 be within an eight-year period. After hearing from

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1 residents of the community, I think the oil and the
2 waste, including drums, have not been completely
3 cleaned up as reported. This fact was proven at the
4 last public hearing, with photos and reports from
5 private citizens. The entire site should be examined
6 again, especially for underground drums and further
7 cleanup of the area completed. Thank you for your
8 support and investigation of the matter. I am
9 concerned for my sons and my future grandchildren. I
10 know you would be also if you lived in my community.

11 MR. NICHOLS - Thank you for giving me the
12 opportunity to speak. My name is Barnett Nichols, I'm
13 on the town council for the town of Richburg. I want
14 to commend the EPA, Mr. Cherry, Yvonne, the whole
15 group, for coming back after January. They really did
16 take a licking and they really got their gall to come
17 back, but we thank them. I like Mr. Cherry's
18 presentation. This afternoon Ms. Yvonne asked me would
19 I go down to the site with her, meet her down there.

20 And I told her I would, I'd be there at 5:00. I didn't
21 have an opportunity to go over any of it I just
22 stopped at the gate, but the fence had been changed a
23 little bit from when I was down there. In 1979, in
24 June, we had a tremendous fire down there and I was a
25 respondent, the first respondent, and I know where

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1 these chemicals went. A lot of them went into the air,
2 a lot of them burned, but a lot of them went into the
3 ground. The reason I asked the lady to put that back
4 on the screen was I want to kind of show you where the
5 fire was. When I arrived, there was a bulldozer in
6 this corner of the site pushing drums, knocking holes
7 in the drums, letting the chemicals out. That's what
8 created the fire. And they had a swell going around
9 this way for this runoff. And I have the documentation
10 from the newspaper that they stopped me from pumping
11 the water. And I told them I came down to put the fire
12 out, I was a firefighter. I didn't know anything about
13 hazardous materials, but I was a firefighter. I didn't
14 realize all this was down there at that time, but it
15 was all kind of barrels, five or six hundred lying
16 against the fence. Old drums, you couldn't even pick
17 them up. But at that time there was three
18 trailers sitting there. I see two now, but it was
19 three. These - - - there wasn't that many tanks back
20 there. I think there was about three or four. But the
21 incinerator had not been built. I don't know what that
22 is, I think it's a barrel site over there, I do not
23 know. I have no knowledge of that. But I am
24 confident, I believe that I can stand here and tell you
25 that the drums are gone, because they were recycling

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1 the drums that day. That's what they were doing. They
2 were letting the chemicals out in the runoff. I can
3 attest to that, that's my belief. I don't believe
4 there's any barrels here or anywhere else on the site,

5 I just don't believe it. But I liked the presentation,
6 I liked the stripping, I liked the air filters. Are
7 those in tandem? Are both of those in line?
8 MR. CHERRY - Yes.
9 MR. NICHOLS - Both in line. Are they going to be
10 housed, Mr. Cherry?
11 MR. CHERRY - Yeah, they have a building to put
12 them in.
13 MR. NICHOLS - No vandalism can bother them?
14 MR. CHERRY - Well, they're going to have a
15 security system. If someone comes in, it will set it
16 off.
17 MR. NICHOLS-I'm totally opposed to a sewer
18 plant. I don't like to see chemicals, I abhor
19 chemicals, you cannot get chemicals out of solids once
20 you put them into solids. And sewage is solids. It
21 would be a costly thing to put into operation a sewer
22 plant down there at this time. Let's get the water out
23 first, and then look at a sewer system. I thank you
24 for letting me speak.
25 MR. BRUCE - My name is Jim Bruce. I'm a resident

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1 of Richburg. It's amazing, you know. My wife and I
2 moved to Rock Hill, South Carolina in 1979 from
3 Memphis, Tennessee. We've lived in big cities all over
4 the United States in our 31 years of marriage. We got
5 to Rock Hill in 1979 and we said, man, that's it.
6 We're never going to go nowhere else. We're going to
7 stay in Rock Hill the rest of our lives. Well, after
8 about 15 years and the doubling of the Rock Hill
9 population, we said, God, we've got to do it again.
10 So, let's - - - for the sake of quality and for the
11 sake of our grandchildren, let's find a farm to move
12 on. So, we looked. And thanks to brother Jim Gaston
13 (phonetic) back there, he found us a little place below
--
14 Richburg - - - about five miles below Richburg
15 and September - - - I'm sorry, August, exactly a year
16 ago, my wife and I moved to that farm. Within three
17 months, our son Frank, his wife, and our three
18 grandchildren also moved onto the farm. Within two
19 more months, our daughter Debbie and her husband James
20 moved onto the farm. And within the next 90 days, our
21 son Jimmy and his little girls are going to move on.
22 Well, I was pretty shocked when I heard about
23 Carolawn. I mean, initially it really was no big deal,
24 but then I got wind that it was cited as one of 114

25 sites in the United States that most needed cleaning

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1 up. Well, I started getting involved, as I talked
2 with some folks. And I really appreciate what's
3 happened since the last meetings. I wasn't - - - I
4 missed the meetings because I wasn't aware of it until
5 after - - - in fact, that's how I found out about
6 Carolawn.
7 I'm satisfied, from all the conversations that
8 I've had with numerous people, that what EPA has done
9 in that five to seven acres I think is commendable.
10 I'm okay with the proposed fix. My only suggestion
11 there is let's get it cranked up, let's get it started,
12 let's get it cleaned up right away. But I've got a
13 real problem emotionally with the of the 60-
14 plus acres. I have talked to an awful t of people in
15 the community. I genuinely believe from the bottom of
16 my heart that the same gusto that you tested those
17 seven acres should be applied to the balance of that
18 60; not only surface testing throughout the 60 acres,
19 but subsurface testing. I believe if you do that - - -
20 and please, give us the assurance that there is
21 anything, any contaminants found that those problems
22 will be addressed at that time - - - while we are
23 addressing the five to seven acres, let's look at the
24 balance as well. I want my grandkids to grow up and
25 not be upset with me because their skin is turning

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1 green, okay. Thank you.
2 MS. MORRIS - I'm not very mechanically-minded, so
3 speaking for the people who live near the Carolawn
4 site, I didn't quite understand, Mr. Cherry, about this
5 air stripper. One of the things you said, that the

6 gases would go out of the side of the stripper, does
7 that mean that the pollution that's in the ground is
8 going to be coming out in air form?
9 MR. CHERRY - Not all of it. Most of it is going
10 to be coming out in solids, that's why I tried to
11 emphasize when you have the groundwater coming out
12 going into the equalization tank, you're going to have
13 solids coming down.
14 MS. MORRIS - But you will have some air pollution?
15 MR. CHERRY - Right. But according to some tests
16 that they've done - - - and they'll have to get a
17 permit - - - it won't be enough to create a problem.
18 It's below the standard that's allowed to come out of
19 that unit itself. And the way they're doing this - - -
20 if you can - - - is I hope - - - I hope that I will be
21 able to do it, is show that all of these units have to
22 have a certain retention time. See, it's only 20
23 gallons per minute that that first unit will take, but
24 they've got 400 gallons of material in that first tank.
25 And basically what that's in there for is retention

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1 time so that you get solids falling out. Then it goes
2 from there and it also will go into, you know, the
3 clarifier. So, you don't have all of this material,
4 you have a very small amount of material coming out of
5 the stack itself.

6 MR. ROGERS - Can I just clarify a little bit of
7 that? The air stripper - - - the concentrations in the
8 groundwater, as we talked last time, aren't necessarily
9 what we'd say are real high. They exceed what would be
10 acceptable from long term use as a groundwater source,
11 and that's why we're basically instructed by the law
12 and feel like it's inappropriate to just leave it
13 without trying to remediate. But the
14 concentrations - - - I think we talked last time that
15 when we combine all these fiber covered wells will be
16 about 115 parts per billion, which is, in relative
17 terms, very little. It's not good for long term
18 consumption, therefore we're going to clean it up. But
19 as far as stripping that out in the air, you end up
20 with a very, very low concentration coming out of the
21 airstream, and therefore it doesn't - - we don't
22 expect it would trigger any kind of requirement for a
23 permit or even be regulated as a permitted discharge

24 because the concentration's so low that it wouldn't be
25 deemed to be able to cause any kind of adverse health

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1 effect.

2 MS. MORRIS - Let's hope not.

3 MS. PEURIFOY - Would you give us your name,
4 please?

5 MS. MORRIS - I'm Margaret Morris.

6 MS. PEURIFOY - Thank you.

7 MR. ROGERS - Are there any other questions,
8 comments, or statements?

9 MR. NICHOLS - I appreciate the chance to get up
10 here one more time. I would like to see EPA appoint a
11 committee from the community to work with them on
12 setting up this air stripper, or whatever they want to
13 do. I'd like the community to be involved, then we
14 wouldn't have to be wondering what EPA was doing.

15 MR. CHERRY - I'd like to get Donna in. I sure
16 would like to have her on my side. Where is she?

17 MR. NICHOLS - We need to be involved with the EPA,
18 the community needs to be involved.

19 MR. CHERRY - Yeah, well, she's been on our side.

20 MR. NICHOLS - Come on up here and give me your
21 opinion.

22 MR. ROGERS - That's, you know, what we talked
23 about this afternoon. From what I understand, we got a
24 flavor last night - - - from what Cynthia and Yvonne
25 talked to the community or some of the members of the

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1 community - - - that they would be more interested in a
2 constant interaction with us. One of the things that
3 was proposed last year in the rewrite of
4 Superfund - - - which never took effect because it
5 wasn't authorized, the bill was never passed, but we as
6 an agency are still looking at it as a tool and
7 implementing it where there's interest and it's
8 appropriate - - - is what they're calling Citizen Action
9 Groups, which are - - - Citizen Advisory Groups, where

10 the agency tries to let the community around the site
11 set up a group that fairly represents everybody's
12 interest, that continue to conduct an ongoing dialogue
13 with the agency as we conduct and implement things
14 related to the site. It's envisioned that it would
15 take place earlier than where we are with this site.
16 We certainly don't want to slow things down, we think -
17 - - when we were here last time, we certainly heard a
18 lot of opposition to the idea of which discharge option
19 we were talking about then. We've responded to that,
20 come back with the original concept of discharge to the
21 creek, and we seem to get a flavor that people don't
22 necessarily oppose that and would like to go forward
23 with implementing the cleanup. So, I think an area
24 that's real ripe for the Citizen Advisor Group would
25 be this continuation of concern over other areas of

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1 contamination. It's kind of like taking 60 acres and
2 saying, let's go look for a needle in a haystack.
3 That's - - - I may not have any money to do that. But
4 at least - - - one of the things that's been very
5 effective is you know more about the operations of
6 those sites over the years, because you can run down
7 the people who know something about it or were involved
8 with it or know this, that and the other. If we can
9 come up with some reasonably credible feedback to hone
10 in on some areas to explore, we can start focusing in
11 on any concerns about additional contamination at the
12 site. And it's very possible that the Citizen Advisory
13 Group would be a good way to go. So, I guess I'd throw
14 that out for consideration. I think Cynthia, since
15 she's our Community Relations Coordinator, I'm going to
16 talk to her about getting back to y'all and trying to
17 start initiating that. But my one warning is that it
18 can't be a focus group with a predetermined interest.
19 It needs to be a fair representation of the community
20 involved with that group. We would like to do it in a
21 way that it's not too burdensome on people's time, but
22 it does, therefore, keep you more involved with
23 interaction with us about the site. It's one of the
24 frustrating things we have is we come and do these
25 public meetings - - - partially, as has been pointed

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1 out earlier, because we're mandated by law - - - but we
2 do feel like we want to interact and find out and can
3 find out things from y'all that we'd have a hard time
4 finding and, you know, identifying in Atlanta. But we
5 generally have low turnout. The Citizen Advisory
6 Group, I think, gets at the issue of creating a more
7 consistent dialogue where you can get better
8 interchange along the way about the life of the site.
9 We would hope and believe this is sort of toward the
10 end of the site and that we can get the mplementation
11 and groundwork going. We don't feel like there's any
12 remaining problem at the old Operable Unit Two areas
13 outside of the site, realizing those are focused areas
14 that we're looking at. We can continue to explore the
15 remaining 60 acres if we can start to get an idea of
16 what makes sense to go out and explore. Basically,
17 this will go into an operational phase whereby the pump
18 and treat won't clean up the aquifer quickly. It will
19 have to operate and be monitored and be evaluated over
20 time as we implement that residue. There's a
21 continuing dialogue as to whether we really have the
22 technology to completely clean up the aquifer, but
23 we'll at least implement the existing technology to
24 date to improve it to the point where we feel like
25 we've done everything we can. And we will periodically

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1 evaluate it to determine when are we no longer being
2 effective in what we're doing, and that will be a very
3 good area for the Citizen Advisory Group to be involved
4 in, too. Because if we come back seven or eight years
5 from now and tell you we're going to shut it off
6 because we can't do any more, but we haven't cleaned up
7 the aquifer, you're going to be upset, I guess. If we
8 can involve you along the way and get a better
9 understanding of what's technically do-able and
10 what's - - - may, in fact, end up being impracticable.
11 We don't want to throw in the towel on the front end,
12 because we think we can significantly improve that

13 groundwater. But we don't know that we can
14 accomplish - - - absolutely don't know we can
15 accomplish the goal we've set, which is get it back
16 downstream. But that's something I want to throw out
17 to consider, because I think we will pursue the Citizen
18 Advisory Group.

19 MS. LISEBY - Of the people in this room, could
20 all the people who reside in this area please stand.

21 MR. ROGERS - Define the area.

22 MS. LISEBY - Okay. If you live within a 15-mile
23 radius of the school, could you please stand. Okay.
24 Of those people - - - I'm just trying to, because I
25 know everybody isn't comfortable speaking - - - of

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1 those people, how many of you would like to see further
2 testing of the additional acreage? Could you please
3 also stand if you would like to see further testing.
4 Is there anybody who did not stand up again? Okay.
5 That's about 95 percent of the residents in this room
6 would like to see continued testing of the additional
7 acreage. Thank you.

8 MR. SMITH - Good evening. My name is Reid Smith,
9 I'm a realtor in Rock Hill. I do a lot of business in
10 the Fort Lawn, Richburg area. I have a question.
11 There's a possibility that at a date that the allowable
12 level of contamination will be raised and then SCDHEC
13 will say, well, this site does not warrant cleanup now
14 because we've raised the level of allowable
15 contaminants. Is that possible? I understand from the
16 last meeting it was right there close, and I think
17 you - - -

18 MR. CHERRY - I think you were talking about the
19 outside of the fence. Isn't that right?

20 MR. SMITH - No, the water. The groundwater.

21 MR. ROGERS - I guess my answer is no. The cleanup
22 goals are established based on health-based
23 evaluations. That comes from toxicology and other
24 disciplines that feed information to the agency. We're
25 not necessarily fully a health-based agency. Agency

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1 for toxic substances, disease registry, and other
2 people get involved in identifying toxic effects of the
3 chemicals in all environments. We utilize the
4 information that comes from that; such as, for
5 carcinogens, a thing called a Slope Factor is
6 established which tends to give you an ability in risk
7 assessment basis to weigh the nature of the toxicity of
8 that chemical so that you can incorporate it into the
9 Risk Evaluation at your site. If for some reason
10 additional health studies indicated the Slope Factor
11 was wrong, it could result in a different cleanup goal,
12 both lower and higher. That's about the only way you
13 would see a change. The MCLs are basically what we use
14 for groundwater, you know, Maximum Contaminant Levels.
15 Some of those are health-based, some of those are
16 technology-based. When we run risk assessment on some
17 of those, they don't come out to be totally protective
18 in our program, but they're an accepted standard
19 throughout the agency for consumption of that material.
20 It's conceivable those could actually go down. If
21 things change in the future, it changes those numbers.
22 And in rare cases it's conceivable, as we develop
23 better knowledge of toxicology, some numbers could go
24 up. But I don't think that's going to be the general
25 trend.

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1 MR. SMITH - On this site.

2 MR. ROGERS - Well, any site. I mean, this is kind
3 of a generic issue. We're using the same toxicology
4 information on this site as we would on any site.

5 MR. SMITH - I realize that.

6 MR. ROGERS - The only difference is the exposure
7 that occurs beneath the site.

8 MR. SMITH - So, it's definitely been cleaned up?

9 MR. ROGERS - Well, yeah, as far as we're
10 around - - - as long as we're around and as long as
11 there's a program to be implemented. And the DHEC
12 people we work very closely with who have a corollary
13 program regardless of whether we continue to be around
14 or not, if there's anything to pursue, the same issues
15 with the same types of approaches to cleanup.

16 MR. SMITH - Is there a time frame?

17 MR. ROGERS - For this site?

18 MR. CHERRY - Can you talk about the bids that went

19 out?
20 MR. ROGERS - For the cleanup or - - -
21 MR. SMITH - Filter and groundwater. Building the
22 air stripper and - - -
23 MR. ROGERS - We didn't want to talk about this
24 because we did want to get feedback on this but the
25 PRP's basically are ready to out and put this bid on

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1 the street; and they have, in fact, done it within the
2 last day or two.

3 MR. CHERRY - Went out on the seventh.

4 MR. ROGERS - And they're, I mean, as anxious to
5 get this thing built and implemented as anybody, since
6 they are doing this, not Federal funds but - - -

7 MR. SMITH - These are the companies that paid
8 before?

9 MR. ROGERS - Yeah, these are the responsible
10 parties we identified to come in and do the
11 evaluations, the testings, and implement the remedy.
12 They're ready to go and moving forward with the bid
13 process now.

14 MR. SMITH - And they've explored every
15 possibility? I know going over to Lando was out. What
16 about Fort Lawn? Going down with a pumping station to
17 Fishing Creek and then going back up to - - - if you
18 have to expand on Fort Lawn's treatment system. It
19 would be that much better for the community down there.

20 MR. ROGERS - They explored some other options, the
21 biggest one being Great Falls. And the sewer line
22 isn't there, and they don't really feel an obligation
23 to lay the sewer lines 10 or 11 miles up to the site.
24 So, I mean, other options as viable as could be
25 perceived were explored.

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1 MR SMITH - Explored with the idea of maybe some
2 help from local or Federal government to - - - if you
3 had to expand on the sewer treatment system at any time
4 would it be - - - would they explore tha possibility?

5 MR. ROGERS - They're not opposed to that. The
6 problem is we don't really have any direct authority to

7 initiate that kind of a process, and the reality of it
8 is: what we're building out there for tile material
9 we're going to treat is completely different process-
10 wise than what you would deal with domestic sewage.
11 You're basically pumping water out of the ground that's
12 relatively clear, and the suspended solids basically is
13 a little sand that comes out from the well. Those fall
14 out in the equalization tank, and you basically have
15 clear water at this point that has solubilized
16 contamination. And therefore, the proceeds from there
17 goes fairly simply. Domestic waste systems have to
18 deal with a very large load of solids coming in of a
19 very different nature, and a different treatment
20 process. So, to expand the system basically means to
21 build almost a parallel, totally different process
22 system to deal with domestic sewage.

23 MR. SMITH - They don't have to fill it in on this
24 site; like I say, pump it to somewhere. I know
25 citizens down the road between here and Lando are

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1 opposed to it.

2 MR. ROGERS - Yeah. Generally, you know, there was
3 so much outcry that - - - we don't want it pumped
4 through our neighborhoods to get to the treatment
5 plant, we'd rather see you dump it in the creek. And
6 we have the technology that's available to do that. To
7 reach the standards and monitor it so we feel like it's
8 controllable and safe to discharge to Fishing Creek
9 without causing an undue threat of an exceedance or a
10 significant long term release. So, we have basically
11 what seems to be the most logical place to go with it.
12 And it's the quickest to implement.

13 MR. SMITH - Right now?

14 MR. ROGERS - At this point.

15 MS. TUCKER - I want to clarify something that
16 seems to have caused some great alarm. I'm Marlene
17 Tucker, and I'm the assigned attorney for EPA at this
18 site. And, having had the arduous task of trying to
19 piece together all the facts of how the various
20 owners - - - former owners of the site operated so I
21 could make a case to find who the Potentially
22 Responsible Parties are, I can tell you that the manner
23 in which the former owner, SEPCO, operated at the site
24 was very - - - was almost a shuffle game with the
25 waste. In fact, they owned more than one site, so a

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1 lot of waste went not only to the Carolawn site, but
2 all the sites that EPA has had to cleanup. I just
3 wanted to put some perspective on the disparity between
4 the alleged amount of waste brought to the site - - -
5 drums and waste brought to the site - - - versus the
6 record of waste that was taken offsite. A lot of this
7 information is not hard and fast, and it's really hard
8 to put a premium on the estimated amount of waste that
9 the company brought to the site because the records
10 were so sketchy and, in terms of keeping inventory in
11 the 1970's, that wasn't a priority for the company.
12 So, what I really want to stress is that EPA did two
13 thorough removals between '81 and '82 covering the
14 entire site, and I'm pretty confident that all the
15 drums were removed. We have no reason to think there
16 are any drums that weren't disposed of, taken offsite.
17 And as Jan had said before, if anyone who lived in the
18 community years and years ago who has any additional
19 information about possible drums on the site, you know,
20 please come forward with that information so we can
21 pursue it. But, as far as EPA is concerned, the site
22 is totally clean as to having any drums, and the
23 removal that was conducted in the '80s took care of any
24 drums that were buried or lying around on the site.
25 Thanks.

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1 MR. RAY - I'm Marcus Ray. I'm the mayor of Great
2 Falls. I only have one or two questions for Mr.
3 Cherry. What I would like to know is what the total
4 cost of this operation will be - - - projected total
5 cost of the five-year period. It says here three to
6 five years.

7 MR. CHERRY - Well, you know, since this is not
8 money - - - maybe someone else at the table will know -
9 - - since this is not money that we are spending - - -
10 it's not EPA money. You know, I don't know what the
11 total cost is going to be. What we try to do is make
12 sure that they give us a treatment system that would

13 get the result that we need. So, what we would pay for
14 it, as EPA, private company, you know, we would
15 if we hired Conestoga-Rovers and it cost one thing. If
16 they, a private company, hire them, it doesn't cost
17 half as much as the government. So, I don't know.
18 I've got some estimations that I could reach back
19 and feasibility studies and dig that out.

20 MR. RAY - Where would I find that?

21 MR. CHERRY - It's in the feasibility study in the
22 records. I can dig that out, but it's just still a
23 rough estimation. And this is an estimation that may
24 be in the millions of dollars, but I have to go back
25 and look. Do you happen to know what that is? I don't

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1 remember what that is, but - - -

2 MR. ROGERS - Let me point out one other
3 sensitivity at this point: PRPs don't particularly
4 like to talk about what they think it will cost while
5 they're in a bidding process. So, you know, we have
6 some general numbers from the feasibility study, we
7 have some experience from other operations, we can
8 guess. We tend to caveat our dollars in terms of the
9 whole process of all five years of operation and
10 maintenance and a number of other considerations. It
11 makes it real difficult for us to really pinpoint a
12 number. And really, you know, there's a good reason
13 why the PRPs don't want to flaunt what they think it's
14 going to cost. You know they have - - - you know, for
15 them to bid it, they've got a contractor's estimate
16 right now of what it's going to cost them. But they're
17 not going to disclose that at this point in time.

18 MR. RAY - In the time span to pump these wells, as
19 I understood it when we were discussing it before, was
20 30 years or more. Now they're saying three to five.

21 MR. ROGERS - Yeah. For comparison reasons we
22 sometimes use that 30-year figure and just put all the
23 different considerations and various remedies in an
24 equal light. But, you know, nobody really knows how
25 long this pump and treat will last.

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1 MR. RAY - This was in our waste water boundary,
2 that's the reason I'm concerned. Another question is
3 operators - - - onsite operators. Mr. Cherry said
4 operators. Going to be one operator? Going to be an
5 around-the-clock operator? Is it a fully automated
6 plant?

7 MR. CHERRY - All that I know is that it would be a
8 certified wastewater treatment plant operator or water
9 treatment operator, and they will have - - - it's an
10 automatic system that will run 24 hours. What they
11 will do, they will work it out as to how much time, they
12 want this operator to spend at this site. Now, this
13 will be spelled out before we get into it, and if
14 there's some people that are involved, we would give
15 that information to them.

16 MR. RAY - Well, as you and I know, automated
17 equipment can fail.

18 MR. CHERRY - No, it's not - - - automatic
19 you know, it's not what it says. But, you know, they
20 are supposed to run it and they will have a start up,
21 they will hire people to be there, and it will be
22 determined how much time that this operation is going
23 to have to be there. Because we're also concerned
24 about, like you asked, there's going to be a security
25 problem, too. You put all this equipment out there,

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1 you just can't leave it out there. People shoot tanks
2 I mean, it happensú

3 MR. RAY - Wastewater, that's my concern. How
4 much waste we're going to have spilled on the ground
5 before that alarm goes - - -

6 MR. CHERRY - Yeah, well, they're going to have to
7 sit down and - - -

8 MR. RAY - You people are going to police them
9 closely, is that what you're telling me?

10 MR. CHERRY - Well, it will be State, it will be
11 community, it will be all of us.

12 MR. ROGERS - One of the things that - - - we're
13 having to deal with this in a lot of pump and treat
14 systems related to Superfund on the groundwater, but
15 we're also having to deal with it from the underground
16 storage tank program and other methods or programs

17 where they're implementing small, confined pump and
18 treats. The technology and the computerization and the
19 electronics have evolved to such an extent that
20 basically the people who monitor and deal with operator
21 control of wastewater treatment plants are recognizing
22 some flexibility as to bring the plant up show me that
23 you've got the duplicity and triplicate backups and
24 various things that electronically will shut the system
25 down should something go wrong, and demonstrate it on

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1 the early phase of the operation of the unit, and we
2 will show some leniency on whether you have to have a
3 full time operator sitting there 24 hours a day to
4 watch a relatively simple operation. So, you know,
5 it's an evolving science at this point. The technology
6 certainly is there that allows it to be done. Yes,
7 there are upsets occasionally where the technology
8 fails but, in a relative sense, this water is not toxic
9 directly. The reason we're dealing with it is long-
10 term consumption of this groundwater would be
11 considered to be adverse to people's health, so we feel
12 like we should remediate the problem. If I drank a
13 little of it, it's not expected that it would have a
14 significantly adverse effect, so a spill would not
15 necessarily immediately cause an adverse effect. We
16 are really addressing the groundwater because if
17 somebody started to use that as a water supply and
18 tried to consume that water for a long period of time,
19 we do feel like it would have an adverse effect on
20 their health.

21 MR. HAYNES - It'll have a - - - For example, the
22 old requirement to monitor - - -

23 MR. RAY - Do you have a pump - - -

24 MR. HAYNES - - - the operator comes there daily
25 to inspect it and monitor that tells them what the

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1 flows are and all that. Licensed operator will have
2 to come in every day and inspect it, make sure
3 everything is working. If it shuts down any time an
4 operator has to come out before they can even start

5 back up.
6 MR. RAY - Wait a minute. I've got the mike. What
7 I'd like to know if you have another plant similar that
8 you could give me a cost on that plant. I'm sure
9 nationwide there must be - - -
10 MR. ROGERS - Could we do that privately?
11 MR. RAY - Well, you can write me a letter. She
12 has my card. MS. LISENBY - It's a public meeting and
13 the public's right to know.
14 MR. RAY - What I'm concerned about also is how
15 widespread is the aquifer under there where these wells
16 are drilled? Are they all the same depth? Are they
17 step drilled in different zones, or what? How
18 widespread is it underground?
19 MR. ROGERS - We do have experience with - - - let
20 me see if I can figure out what the question is. I
21 guess some discussions took place yesterday about a
22 similar system we have down near Columbia which we
23 implemented. It had some problems that caused the cost
24 to go up a little bit based on problems that occurred
25 along the way, but were not related to the technology

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1 or anything. But the bid was about two million dollars
2 for a system to go in that would - - - I don't know,
3 volume-wise it's probably in a similar size for
4 handling water flow, 10 to 20 gallons a minute. And it
5 was in operation for three or four years, was the
6 estimated life of that system. And that factors in
7 subcontractor costs and do you have an operator on the
8 site and do a number of other things. The hardware
9 costs really don't necessarily amount up to that much.
10 The design cost and some of the other labor of
11 continuing to visit the site on a periodic basis - - -
12 MR. RAY - Through the years. You says it's
13 between three and five years, taking more than five
14 what would it cost?
15 MR. ROGERS - I don't really have a number for you
16 offhand on that. We can dig up some information for
17 you.
18 MR. RAY - Much safer and more secure than to have
19 - - -
20 MR. ROGERS - Well, as we learned last time,
21 there's pros and cons to that argument, but, yeah.

22 MR. RAY - That's all I had.
23 MS. BRYAN - My name is Nita Bryan, I live in
24 Edgemoor. I want to thank EPA and congratulate you on
25 your treatment center that's going in. I have a

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1 comment and a question. One, I thank y'all for going
2 with us today, especially John and Cynthia trucking
3 over there to the property. I got concerned. I wasn't
4 even going to speak, and then I heard again that there
5 are no more contaminants at this site, there's no more
6 drums. And I just want to say that I was there today.
7 Unless someone came in and cleaned them up after I left
8 today, they're still there. And there's materials that
9 are not identifiable in large quantity, and things that
10 neither Yvonne nor Cynthia could tell us what they
11 were. I'm not trying to put y'all on the spot, but
12 they did not know. There were drums under the ground,
13 you could see the edges of them. We stepped on them
14 and pushed them, they appeared to have been there for a
15 long time. So, there's still contaminants of some
16 sort. I don't know what they are, but they are there.
17 And although there have been two site cleanups, as I
18 understand from the report, they're still there after
19 all that groundscraping and all that removal. But my
20 question is that I'm hearing that the community is
21 saying, well, we want you to do continued testing, and
22 that you're in agreement that we could do that and
23 yet, after we talked today, my impression from you was
24 that there really isn't any money left to do that
25 testing. I guess I'd ask you to disclose that to the

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1 community as to whether or not there really is any more
2 finances to support any further testing of the other 60
3 acres.
4 MR ROGERS - Currently our status of where we are
5 in funding is sort of questionable. With budget cuts
6 and other things going on there was a recision bill

7 that was passed this year to basically pull back some
8 monies that were already allocated for 1985 - - - or,
9 1995. Which, at this point in the year, may not have
10 actually been spent anyway. But we did, in fact, as a
11 Region, shut down some starts of some sites in other
12 states that were ready to be started, because of that
13 effort to pull back the money and reduce spending for
14 the current fiscal year. As far as we know, we have
15 funds next year. We don't know how long we have them,
16 and we have other dilemmas to deal with. We, like
17 every other Federal agency, have to be appropriated
18 money every year. We, unfortunately, also
19 because of Superfund - - - have the dilemma of dealing
20 with a law that - - - the law really doesn't expire,
21 but part of it does, the part that collects the tax
22 that generates the money to fund the program. That
23 being the case, the program could go on if there's
24 money in the trust fund to continue on, but we don't
25 really know what's going to play out as far as

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1 reauthorization, when will it be reauthorized and what
2 kind of restraints will occur before the
3 reauthorization of Superfund. That being the case, it
4 makes us hard to commit to specifically saying we could
5 get our hands on money to do the kinds of investigation
6 we'd have to do. We certainly would try. And it would
7 certainly be hinged on right now we're going to have to
8 start prioritizing everything to the worst-case-first
9 scenario. That being the case, further investigation
10 of this site might not break out as the worst-case-
11 first scenario if there are limited. We don't
12 have the answer, that's the bottom line. We would try
13 to get the funds, we would try to go forward, we could
14 do some things in-house of a limited nature with our
15 existing resources in-house, but there are a lot of
16 caveats out there that could impact adversely our
17 ability to continue to do that. If we had some solid
18 leads, we can also work through DHEC to try to pursue
19 some things that way, too. It's an unanswerable
20 question but, I mean, there are options that
21 we would continue to do along. Right now we're not
22 looking total doom and gloom. We think we'll have
23 funds, and we think if there's a legitimate need we can
24 go forward and investigate those things. But it's a
25 little more questionable at this point than it

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1 typically has been in the past.

2 MR. CAMP - My name is Don Camp, and I live in
3 Great Falls. From what I read here about the
4 contaminated water, it's no great risk to anyone right
5 now. Okay. If we're going to treat it and we're going
6 to say it's no great risk, then I'm wondering, are we
7 moving it from Fort Lawn/Richburg area and place it in
8 Fishing Creek and hoping the dilution will do a whole
9 lot. And that's my question. If that be the case, I
10 think we could contain it and dilute it in the Catawba
11 River, and the dilution would be much greater because
12 if you're familiar with Fishing Creek, that water gets
13 about this deep in areas, and all water flows to the
14 south from the area we're in. So, I really think we
15 should think again about putting it in Fishing Creek
16 right now. For the preservation of the southern farms.

17 MR. ROGERS - Certainly, as we've discussed, we
18 don't intend to dilute it in the creek, we intend to
19 treat it down to acceptable discharge level before that
20 option, just like any discharge for any facility would
21 be required to do.

22 MR. CAMP - Don't you ordinarily have discharges
23 though that have been fined because they're over limits
24 or - - - I mean, don't EPA and DHEC ordinarily have
25 unauthorized discharges?

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1 MR. ROGERS - Sure.

2 MR. CAMP - Okay. That's - - -

3 MR. CHERRY - But this system is almost what they
4 call an advanced waste treatment system. The carbon
5 and the types of technology - - -

6 MR. CAMP - Almost? It is, or almost?

7 MR. CHERRY - Oh, it is. It is.

8 MR. CAMP - Well, you said it was almost - - -

9 MR. CHERRY - Yeah, but what I'm saying - - - I
10 hate to say it - - - well, it is when you start talking
11 about activated carbon and the type of technology - - -
12

13 MR. CAMP - When you talk of activated carbon, have

14 we found any carbon in the water?
15 MR. CHERRY - No, I mean activated carbon to remove
16 the impurities.
17 MR. CAMP - Remove them?
18 MR. CHERRY - Yeah.
19 MR. CAMP - Okay, so it would remain in the
20 carbon - - -
21 MR. CHERRY - Right.
22 MR. CAMP - - - - to be placed in another area.
23 MR. CHERRY - Well, it would either be generated or
24 - - - well, yeah, it would.
25 MR. CAMP - Okay. And when you speak of solids - -

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1 - we're speaking of water, so when we speak of solids,
2 what are we speaking of? Are we speaking of the mud,
3 the sediment, what type solids are we speaking of?
4 MR. CHERRY - No, we're speaking of the things that
5 are coming out. Actually, there's some of the
6 contaminants in the solids that's - - - you know, so,
7 actually a lot of this stuff is coming out in the
8 solids.
9 MR. CAMP - What type solids?
10 MR. CHERRY - Well, the volitus.
11 MR. CAMP - What solids?
12 MR. CHERRY- Well, it's basically only probably
13 five percent, 95 percent water.
~
14 MR. CAMP - What is it?
15 MR. ROGERS - Suspended solids from the well.
16 Particles from the well.
17 MR. CAMP - Suspended solids?
18 MR. ROGERS - Many - - - now, soil particles from
19 the well, because you're pumping the well and picking
20 up at least, because of the disturbance, some suspended
21 solids related to the material in the well.
22 MR. CAMP - Primarily mud?
23 MR. ROGERS - Not necessarily. Properly installed,
24 it wouldn't be mud.
25 MR. CAMP - Silt?

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1 MR. ROGERS - Probably silt and sand
2 MR. CAMP - Silt and sand. Okay, that answered my
3 question.
4 CONGRESSMAN SPRATT - I've been asked these
5 questions individually. I'm John Spratt and I'm the
6 Congressman who represents this District. We may as
7 well put it on the record to get some answers. First
8 of all, I think I knew this outfit, SEPCO. In fact, I
9 was about to sue them because they owned the plant up
10 near River Hills.
11 MS. PEURIFOY - You're talking about Hinson?
12 CONGRESSMAN SPRATT - Yeah. Hinson, is that the
13 name of it now?
14 MS. PEURIFOY - Correct. Vaughn Hinson owns the
15 company.
16 CONGRESSMAN SPRATT - Vaughn Hinson, that's exactly
17 right, yeah. We went there one day because every time
18 it rained these chemical fumes rose from the ground and
19 wafted all over the subdivision and people didn't know
20 what the problem was until I went there with an
21 engineer and we found an Austrian chemist by the name
22 of Behr (phonetic). Maybe you found his name in the
23 records. I remember the guy.
24 MS. TUCKER - In fact, we tried to locate him.
25 CONGRESSMAN SPRATT - You have found him?

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1 MS. TUCKER - No, we've lost trail of him.
2 CONGRESSMAN SPRATT - Well, he was pretty
3 forthright, because I think he was about to be fired;
4 not because he was incompetent, but because I think
5 they were running pretty low on gas at that time. But
6 he explained the problem to us, and it was that they
7 were draining these residues from the North Carolina
8 furniture industry into this particular plant and they
9 were separating out the paint remover from the paint
10 sludge in the paint remover and reselling the paint
11 remover to the furniture industry. And then they had
12 the sludge left over, and they were shipping it down
13 here. He said every time they brought a barrel
14 in - - - a 55-gallon drum in - - - and get it off the
15 back of the truck, and there were no regular means of
16 conveyance, they tended to spill it on the site, all
17 over the site. And then anytime the - - - once they
18 got enough of that stuff spilt over the site it made it
19 pretty slick, and they would call Rock Hill Concrete
20 Company and say send them another load of gravel and

21 they'd just gravel over everything. So, the chemicals
22 were seeping down into the ground. That was a problem
23 up there, but it suggests the kind of way they did
24 business and raises some questions about this site down
25 here. I also happen to have a next-door neighbor who

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1 was kind of hard up for a job, and he had the job of
2 running the site down here for a short while. I'm not
3 sure the fire occurred when he was there. His name was
4 was Gregory, maybe you've seen his name somewhere. He
5 told me once a gruesome story of a dog who'd got
6 caught, stuck up in the goo, the viscous mess on the
7 back of this site. He said he almost killed the dog,
8 almost shot him. He was able to get it free, and I
9 think he brought the dog home with him for a time. But
10 that suggested to me that there was a lot of stuff
11 left. The image, the mental picture I have from the
12 way he described it, was that there was this viscous
13 sludge on a good part of the site, enough so that a
14 curious dog wandered into it and got mucked up in it;
15 and he couldn't get out, it was so deep and so sticky.
16 For whatever that's worth, I put that on the record.

17 Now, I'm interested in exactly, legally, where we
18 stand here. If this is the agreed upon remediation
19 solution, are the PRPs released by court order once
20 this solution is agreed upon as the remediation
21 solution for this site?

22 MS. TUCKER - Well, there are PRPs known as the
23 Carolawn Steering Committee, comprised of a group of
24 generations that were customers of the Carolawn Company
25 during the time that they owned the site. And their

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1 operating constraints consent decree which has been
2 entered in the District Courts that they have agreed to
3 conduct the remedy and pretty much build the system.

4 So, they're operating pursuant to an agreement with
5 EPA.

6 CONGRESSMAN SPRATT - Do they then go back to the
7 court and submit to the court this proposed solution,
8 and if EPA finds it to be an adequate solution you sign
9 off on the consent decree and then this becomes the law
10 of the case, there's no further remedy available? If
11 there's water contamination later found on the site,
12 you can't go back to the PRPs?

13 MR. ROGERS - Let me answer that. This is a unique
14 case. Most Superfund sites, yes, that's the case. I
15 was just alluding that this is a unique case in the
16 sense that we do have a consent decree for this cleanup
17 with the Carolawn group, but it's a partial consent
18 decree. Most sites would have a complete consent
19 decree that takes the site totally to conclusion and
20 provides for covenants and other waivers at the end
21 that you've done everything necessary to deal with this
22 site. The consent decree in place here, because of the
23 nature of the SEPCO operation versus the Carolawn
24 operation - - - and they were very much divisible,
25 especially after the drums and waste were pushed

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1 outside of the fenced area in Carolawn and continued to
2 work just inside of the fence - - - the Carolawn PRPs
3 made an argument that it wasn't fair for them to do all
4 this work. They would commit to designing and building
5 the pump and treat system, so we have a consent decree
6 lodged in court, entered in court, that carries them
7 through to operational activities at the pump and
8 treat. We don't have a consent decree in final form
9 that would settle the long-term operation and
10 maintenance at this site, because they wanted us to
11 bring in the SEPCO parties. And we did bring in the
12 SEPCO parties, and we did have an agreement, and we've
13 actually lodged a consent decree to deal with a joint
14 deal where SEPCO parties - - - some SEPCO parties - - -
15 and the Carolawn group would continue on with the site,
16 with this activity. Unfortunately, Hinson has now come
17 up, and the SEPCO people over at Hinson are a little
18 upset that they didn't realize they would - - - they
19 think they have double exposure. Nobody knows and can
20 account for where these drums actually ended up but, in
21 fact, their names show up in two places, and they feel
22 like that's a little unfair. They've caused us to
23 reevaluate where we are on that lodged consent decree.

24 So, this is still an open issue that we have to deal
25 with through some negotiations and some other matters

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1 that relates to Hinson, as well as - - -

2 CONGRESSMAN SPRATT - But if you finally settle
3 upon this as the remediation solution for this site, is
4 that final? Does it exonerate them from further
5 responsibility?

6 MR. ROGERS - Only related to the matters at hand.
7 And if this waste is somewhere else on the site, new
8 activity, totally unknown, it's conceivable we have an
9 opener in there. But, no, if - - - yes, if they
10 if we found drums right under the site, we'd have a
11 problem. It'd be a fund-lead activity, they'd be
12 exonerated. We don't expect that to be the case, but
13 we've tried to craft that in a narrow enough language
14 that it's matters at hand as identified. The public
15 here will want to look at the 60 acres, we've
16 identified the site as originally as a five to seven
17 acre site, so that's really what the investigation has
18 dealt with. I think we would have room to open one of
19 the others, the remaining part of the 60 acres.

20 CONGRESSMAN SPRATT - Now, to what extent does the
21 completion of this task depend upon EPA funding? How
22 much of this comes out of the PRP's pocket for
23 completion? What level of funding - - - to what extent
24 is the consummation of all this dependent upon your
25 being fully funded?

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1 MR. ROGERS - They're paying all the bills, and our
2 consent decree has them reimbursing us for our cost to
3 oversee all activities. We have to expend it out-of-
4 pocket and - - -

5 CONGRESSMAN SPRATT - Yours is mainly an overhead,
6 an oversight expense - - -

7 MR. ROGERS - Yes.

8 CONGRESSMAN SPRATT - - - and how far you
9 can - - -

10 MR. ROGERS - At this point.

11 CONGRESSMAN SPRATT - Okay.
12 MR. ROGERS - If we trigger other investigations
13 outside of what we know as the site - - -
14 CONGRESSMAN SPRATT - You've got to have the money
15 to undertake that?
16 MR. ROGERS - Yeah. That could be a fund-lead
17 activity, because I think we'll see a little resistance
18 from this group.
19 CONGRESSMAN SPRATT - Yeah.
20 MR. ROGERS - And therefore it does potentially
21 impair our ability to follow through on relevant leads.
22 CONGRESSMAN SPRATT - Well, you were polite enough
23 not to be specific, but the appropriation bill that
24 passed the House of Representatives, I did not vote for
25 it, if I can make that clear for the record.
It would

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1 cut EPA's budget by 37 percent next year, and it would
2 almost certainly have an impact on the conduct of
3 activities like that. Now, let's hope that doesn't
4 pass, but it certainly passed the House of
5 Representatives, so it doesn't indicate that you'll get
6 funded at the President's level of request for the next
7 fiscal year. That could truncate some of these
8 activities, that's what I understand you to say.
9 MR. ROGERS - Yeah, our guess is that that's a
10 signal that we think the Senate will moderate a little
11 bit, but we guess we're going to get a significant cut.
12 And that cut will impair our ability to deal with
13 everything on the plate, let alone new work. And we
14 don't know what extent that is until we find out what
15 the budget is. We have a double jeopardy. We have,
16 really, a problem with the reauthorization of
17 Superfund. The appropriation bill specifically - - -
18 Superfund says, you can have this money next year, but
19 you can't spend it past December 31st. If that goes
20 through and - - - you know, Superfund's probably a good
21 program to have a confrontation over; let's shut it
22 down for a while and see what happens. In retrospect,
23 in 1986 - - - I've been in this program for 21 years.
24 Emergency response and then this part, more
25 recently - - - in 1986 we suffered some severe damage,

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1 and probably a two to three year period,
2 because of people who left over an unfunded issue with
3 reauthorization of Superfund. That's concern.

4 CONGRESSMAN SPRATT - Thank you very for
5 coming.

6 MS. JONES - Basically, I'd like to thank everyone
7 for being patient with me, so to speak. And too,
8 Anita, do not worry about putting me down. You are
9 here to address and also - - - not to address but, for
10 the most part, give us your concern. I go out to
11 the site with Anita and Donna today, actually Cynthia
12 and myself, and she is right, we did see I would
13 call tops of drums, so to speak, what I call
14 debris. Something that I did tell her that a lot of
15 times - - - I don't know exactly what it is, but a lot
16 of times when people see - - - this is really
17 interesting to me - - - but a lot of times when people
18 see either drums, or they know it's a Superfund site
19 or, you know, even like I said we have storage tanks
20 out there that we're using for our activities, their
21 perception is that it is hazardous. As I stated
22 before, we have tested the soil. We didn't test the
23 drum tops, you're right. That's something that we're
24 probably not going to do. But I also told her that we
25 do keep open - - - as if, for some odd reason, we do

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1 give what we would call a relevant - - - and I don't
2 know if you want to call it an inquiring, or someone
3 that actually says, I know it's here or we think it's
4 here. That's something that we will follow up on. I
5 know I also went out to the site with Mr. Nichols today
6 and, you know, he was considered an eyewitness. It
7 sort of, I guess, puts you on the spot; but, again, I
8 did not hear that there were buried drums. And really,
9 at all times we would like to keep the channels open.
10 If you know someone who may not be here tonight but
11 who, you know, maybe was there when everything took
12 place, that, you know, has a pretty good feeling that -
13 - I shouldn't say a good feeling - - - he knows - - -
he knows
14 he or she knows that they buried drums - - -
not just

15 anywhere on the site, but they know that those drums
16 were buried or they saw where those drums were buried,
17 we would like to talk to them. But, basically, we
18 haven't heard that from the public. We have, you know,
19 people saying that, there's rumors, but we haven't
20 actually - - - we haven't actually had a person that
21 has said, there are buried drums on this site, and this
22 is where they are. We just haven't had that. Again,
23 anybody that you know or that may know something about
24 that, we would be interested in knowing that. But,
25 without that, I mean, we don't really have anything to

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1 follow up on. Thank you.
2 MS. PEURIFOY - Anybody else have anything to say?
3 We'd like to thank you for coming out tonight. All the
4 comments and questions and concerns that have been
5 raised tonight will be put into a document - - - and
6 it's called the Responsiveness Summary - - - that will
7 part of the Record of Decision. That will be placed in
8 the Information Repository. I will be sending you out
9 a notice when the final decision is made and let you
10 know what's going to happen next. Thank you for
11 coming.
12
13
14
15

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CERTIFICATE OF REPORTE

State of South Carolina)
)
County of York)

I, Susan Wachsmuth, CVR, do hereby certify that
the aforesaid deponent was placed under oath; that I
reported by Stenomask the foregoing proceedings at the
time and place herein designated; that my tape was
thereafter reduced to typewriting under my supervision;
and that the foregoing pages numbered 3 through
68, inclusive, are a true, accurate and correct

transcript of the aforesaid proceedings.

I further certify that I am not a relative,
employee, attorney or counsel of any of the parties,
nor relative or employee of such attorney or counsel,
nor in anyway interested in the event of said cause.

This the 5th day of Sept., 1995, in the
City of Rock Hill, County of York, State of South
-
Carolina.

Susan Wachsmuth, CVR
Court Reporter